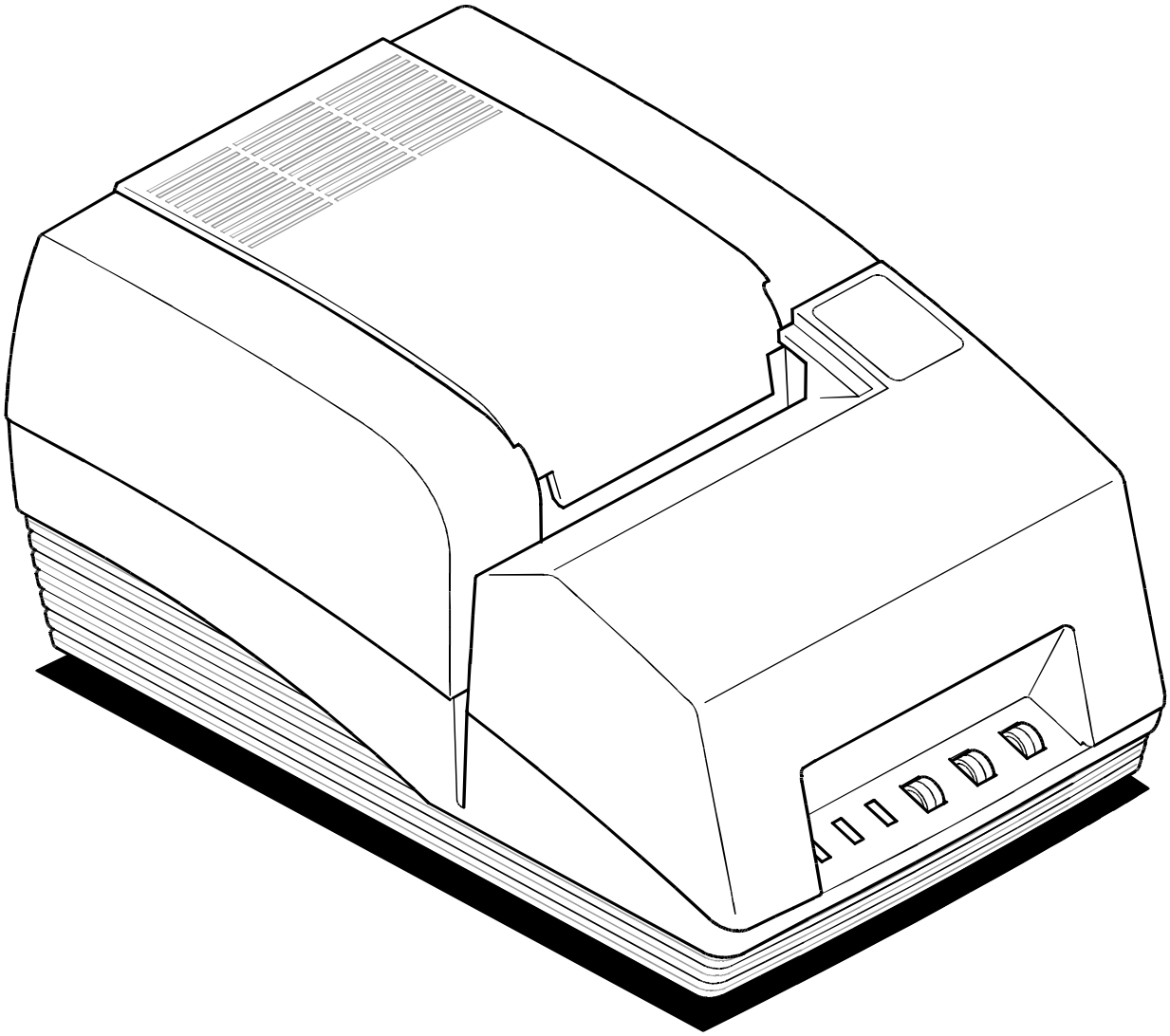
OKIPOS *150 Series*

# MAINTENANCE MANUAL



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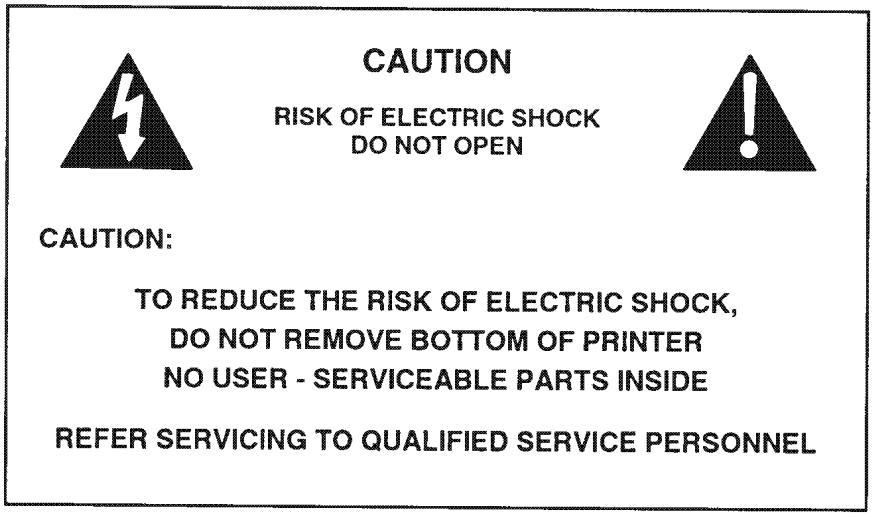
Back of cover do not print


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE BOTTOM OF PRINTER
NO USER - SERVICEABLE PARTS INSIDE
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL

***WARNING:*** To prevent fire or shock hazard, do not expose this printer to rain or moisture.

***Disclaimer***

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Revision A, July 1998

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***Federal Communications Commission***
***Radio Frequency Interference Statement***

This equipment complies with the limits for a Class A computing device in accordance with the specifications in Part 15 of FCC rules which are designed to minimize radio frequency interference in the installation; however, there is no guarantee that radio or television interference will not occur in any particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on while the radio or television is on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the radio or television receiving antenna;
- Relocate the printer with respect to the receiver;
- Move the printer away from the receiver;
- Plug the printer into a different outlet so that the printer and the receiver are on different circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: *How to Identify and Resolve Radio/TV Interference Problems*.

This booklet is available from the US Government Printing Office, Washington, DC 20402. Order stock number 004-000-00345-4.

***Canadian Department of Communications***
***Radio Interference Statement***

This Oki Europe Ltd. apparatus does not exceed Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

***UL, CSA, VDE, CE Statement***

OKIPOS printers are UL & CSA Listed, VDE Certified, and carry the CE Mark.

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# PRODUCT INFORMATION

## WHAT IS IN THIS BOOK?

### WHO IS IT FOR?

This is a maintenance guide intended for trained, service technicians.

### WHAT DOES IT COVER?

This book only covers the 150 Series Printer, not the entire point-of-sale system, but it will tell you all you need to know about properly maintaining and servicing the printer. You will find out how to clean and adjust the printer, troubleshoot problems, and disassemble the printer.

This book also provides general and technical information about the printer, so you will learn what the features are, how reliable it is, and what its printing capabilities are.

### WHERE CAN YOU FIND MORE INFORMATION?

A *Programming Guide* is available if you need to know how to program a point-of-sale terminal or a PC to work with the printer. It describes all the commands the printer recognizes to perform its functions.

An *Operator's Guide* is also available and is intended for new or experienced operators. It covers setting up and using the 150 Series Printer with any point-of-sale system.

For information about ordering these books, refer to the next section.

## CONTACTING OKI

Contact your dealer first for general information about the 150 Series Printer and how it works with your system. If you need more specific information about the printer, you may contact your Oki dealer directly.

The Sales and Technical Support departments will be able to help you with most of your questions.

Contact the Technical Support department to receive technical support, order documentation, receive additional information about the 150 Series Printer, obtain information about your warranty, or send a printer in for service. To order supplies or receive information about other Oki products, contact Your Oki Dealer.

You may reach both the Sales and Technical Support departments your Oki Dealer or you local Oki Country Office. For details please see the following website:

Web Site http://www.okieurope.co.uk

# WARRANTY INFORMATION

## OPTIONS

All OKIPOS printer warranty options are available through your Oki dealer.

## SERVICE INFORMATION

If you need a printer serviced, whether it is under warranty or not, call your dealer. You may have several options for service depending on your contract. Your dealer may service the printer directly or have a service agreement with a local service contractor.

If your dealer instructs you to send the printer to your local Oki country office for service or if you bought the printer directly from Oki Please call the office first to arrange a return and return reference number.

You will need to repack the printer and ship it directly to Oki. Be sure to keep the original packing materials and box. Please refer to "Unpacking the Printer" in the *Operator's Guide*.

# ORDERING SUPPLIES

You may order supplies by calling your Oki dealer:

- Ribbon Cassettes
- Take-up Spools
- Print head
- Cables

## PAPER

| Paper | Type | Dimensions |
|---|---|---|
| Receipt Paper | Single-ply | 3.00 inches (width)<br>unless 3.25 inch printer option<br>3.5 inches (diameter)<br>240 feet (length) |
| Receipt-Journal Paper | Double-ply | 3.25 inches (width)<br>3.5 inches (diameter)<br>125 feet (length) |
| Receipt-Journal Paper | Triple-ply | 3.25 inches (width)<br>3.5 inches (diameter)<br>85 feet (length) |

## RIBBON CASSETTES

| Color | Supplier |
|---|---|
| Black | Oki |
| Purple | Oki |

**Note:** The warranty may be voided if other than genuine Oki ribbons are used.

## TAKE-UP SPOOLS

| Take-up Spool |
|---|
| Journal Take-up Spool |

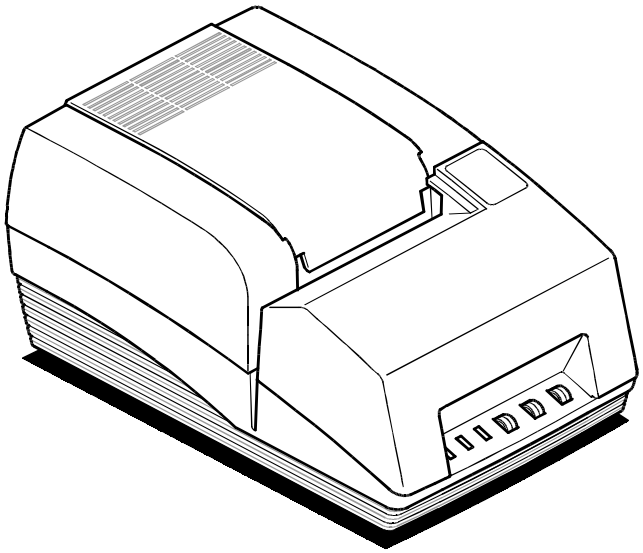
## PRINT HEAD

| Print head and Clamp |
|---|
| Print head |
| Print head Clamp |

## CABLES

| Cables |
|---|
| 110V Power Cable |
| 230V Power Cable |
| Parallel Communication Cable |
| Serial Communication Cable<br>PC, 9-Pin Female to 9-Pin Female<br>PC, 9-Pin Female to 25-Pin Female |

# DESCRIPTION OF THE 150 SERIES PRINTER



The OKIPOS 150 Series Printer is a stand-alone, 40-column, high-speed impact printer. The 150 Series Printer performs a variety of functions in a point-of-sale environment and is available in the following models:

- Model 151: Receipt only
- Model 152: Receipt and Journal
- Model 153: Receipt and Validation (with or without Journal)

# 150 SERIES MODELS

Each of the three models in the 150 Series line of printers has its own unique set of features.

***OKIPOS 151 Receipt Printer***

The model 151 is a receipt printer used for applications requiring high-speed printing of receipts.

- 340 characters per second bidirectional printing
- 41-column printing at 17 characters per inch

***OKIPOS 152 Receipt and Journal Printer***

The model 152 is a receipt and journal printer used for applications requiring a transaction audit trail (journal) in addition to high-speed printing of receipts.

- 340 characters per second bidirectional printing
- 41-column printing at 17 characters per inch
- Journal take-up

***OKIPOS 153 Receipt, Journal, and Validation Printer***

The model 153 is a receipt and validation printer (with or without Journal) used for applications requiring printing of up to 15 lines on inserted forms such as checks or charge slips. In addition, it provides the same high-speed journal and receipt printing as the model 152.

- 340 characters per second bidirectional printing
- 41-column printing at 17 characters per inch
- Journal take-up (optional)
- Form insertion sensor
- 15-line validation

## STANDARD FEATURES

The following features and items are standard on all 150 Series printers:

- Centronics parallel interface with 6K buffer
- Internal International Power Supply (95 to 265 VAC)
- Operating controls and lights
  - Power on/off switch and indicator
  - Paper Feed button
  - Forms Release button
  - Resume button
- Ready, Alarm, and Power LEDs
- Paper Out sensor
- Operator controlled self-test
- Cash drawer connectors (RJ12) and driver (24V, 1.5 amp pulse for approximately 150 ms; drawer open/closed status reporting)
- Nine-pin stored energy printhead
- Short line seeking logic
- Characters and Graphics
  - Lowercase characters with descenders
  - 340 characters per second bidirectional printing
  - 41-column printing at 17 characters per inch
  - Emphasized and enhanced print
  - IBM® compatible all points addressable graphics
- Software controlled vertical spacing
- Snap-on ribbon cassette
- Steel receipt tear-off bar

# OPTIONAL FEATURES

The optional features either replace a standard feature or enhance the operation of the printer. All optional features are installed at the factory and must be selected when the printer is ordered.

- RS-232C serial communication interface
- RS-1284 bidirectional parallel communication interface
- USB (Universal Serial Bus) - to be announced
- OPOS Drivers
- Knife Option (Model 151)
- Journal cover lock
- Custom colors and logo
- 3.25 inch width paper bin

# TECHNICAL SPECIFICATIONS

## PRINTING SPECIFICATIONS

- Printing method: Impact dot matrix
- Head wire arrangement: 9 pins in line
- Print wire diameter: 0.34 mm (0.012 in.)
- Print wire pitch: 0.353 mm (0.013 in.)
- Print directions: bidirectional, logic seeking
- Print zone: 71.12 mm (2.8 in.) or 60.96 mm (2.4 in.)

## PRINT CHARACTERISTICS

The 150 Series Printer prints characters in a variety of pitches as shown in the following table. Each pitch can also be printed in a variety of styles affecting the appearance of the characters and the speed of the printer.

For information about programming the printer to print a particular pitch or style, please refer to the *Programmer's Guide*. You can order the *Programmer's Guide* from Oki. See "Contacting Oki" on page 7.

| Pitch (Characters per Inch) | Maximum Characters per Line | Characters per Second |
|---|---|---|
| 8 CPI | 18 | 220 |
| 10 CPI | 24 | 275 |
| 12 CPI | 28 | 330 |
| 15 CPI | 36 | 340 |
| 17.1(Condensed) | 41 | 340 |
| 20 (Super Condensed) | 48 | 340 |
| 24 (Super Condensed) | 57 | 340 |
| 5 (Double-wide) | 12 | 175 |
| 6 (Double-wide) | 14 | 175 |
| 7.5 (Double-wide) | 18 | 175 |
| 8.5 (Condensed Double-wide) | 20 | 175 |
| 10 (Condensed, Double-wide) | 24 | 175 |
| 12 (Super Condensed, Double-wide) | 28 | 175 |

## RELIABILITY

- Mean time between failure (except printhead): 30,000 hours (Model 151)
- Printhead life: 200 million characters
- Mean time to repair: 15 minutes

## DIMENSIONS

- Width: 6.30 inches
- Length: 11.35 inches
- Height: 5.65 inches

## WEIGHT

- Approximate weight: 6.5 pounds
- Approximate shipping weight: 9.5 pounds

## POWER REQUIREMENTS

The Model 150 is designed to be AC self-powered in domestic and international markets. The printer is equipped with a universal input power supply that is designed to operate worldwide without modification.

| Supply Voltage Rating (VAC) | Supply Voltage Range (VAC) | Frequency (Hz) | Rated Power (watts) | Current Idle (amps) | Current Printing (amps) |
|---|---|---|---|---|---|
| 100 - 240 | 90 - 264 | 47 - 63 | 45 | 0.08 @ 120VAC<br>0.04 @ 240VAC | 0.9 @ 120VAC<br>0.5 @ 240VAC |

## ENVIRONMENTAL CONDITIONS

The printer will run at its best when stored and operated in an environment that meets the following temperature and humidity conditions:

- Operating temperature: 0° to 50°C (32° to 122°F)
- Storage temperature: -10° to +60°C (-14° to +140°F)
- Operating relative humidity: 10% to 90% (noncondensing)
- Storage relative humidity: 5% to 90%

# COMMUNICATION INTERFACES AND CASH DRAWER CONNECTORS

## SERIAL CABLE

***Cable Requirements***

The OKIPOS 150 Series Printer requires an RS-232C shielded cable, no more than 50 feet long. The cable must be UL and CSA approved.

***RS-232C Communication***

The RS-232C interface uses the following protocol and communication characteristics:

- Up to 19.2K Baud
- Up to 6K Buffer
- Ready/Busy or XON/XOFF Protocol
- Communications Diagnostic Mode

***Pin Assignments for 9-pin Printer Connector***

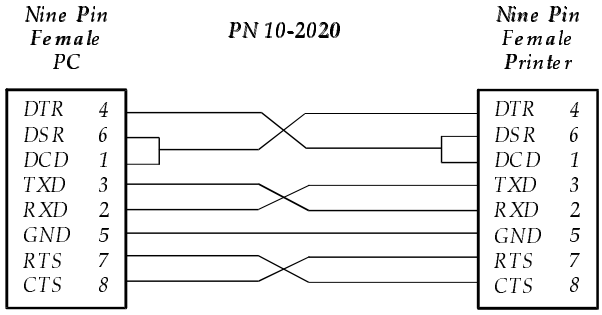
| Pin | Name | Description |
|---|---|---|
| Pin 1 | DCD | Data Carrier Detect |
| Pin 2 | RX | Receive Data |
| Pin 3 | TX | Transmit Data |
| Pin 4 | DTR | Data Terminal Ready |
| Pin 5 | GND | Signal Ground |
| Pin 6 | DSR | Data Set Ready |
| Pin 7 | RTS | Request To Send |
| Pin 8 | CTS | Clear To Send |
| Pin 9 | SSD | Secondary Data |

***Serial Cable Configurations***

The following cable configurations are for different host requirements.

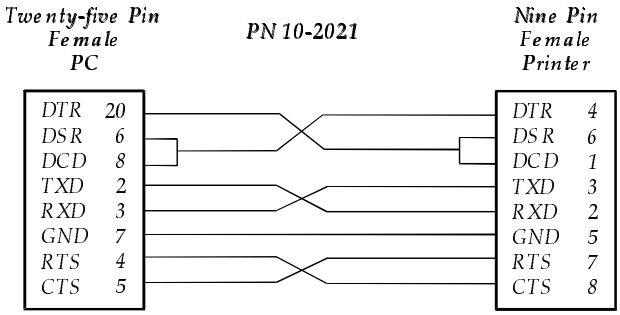
***Serial PC to 150 Series (Null Modem)***

9-pin to 9-pin female. Use this cable for printers connected to PC's or PS/2's with 9-pin serial ports.




### *Serial AT to 150 Series (Null Modem)*

Use this cable for OKIPOS 150 Series printers connected to PC's or PS/2's with 25-pin serial ports.



# PARALLEL CABLE

***Cable Requirements***

The OKIPOS 150 Series Printer requires a 25-pin male D-shell connector at the printer. To connect the printer to most PC's use 25-pin male to 25-pin male parallel interconnect cable.

***Pin Assignments***

| Pin | Signal | Description | Direction |
|---|---|---|---|
| Pin 1 | STROBE | Clock Data to printer | Host to Printer |
| Pin 2-9 | D0 - D7 | Data | Host to Printer |
| Pin 10 | ACK\ | Printer Accepted Data | Printer to Host |
| Pin 11 | BUSY | Printer is Busy | Printer to Host |
| Pin 12 | PE | Paper Out / Status | Printer to Host |
| Pin 13 | SLCT | Printer Selected | Printer to Host |
| Pin 14 | AUTOFD | Auto feed paper | Host to Printer |
| Pin 15 | ERR\ | Printer Error | Printer to Host |
| Pin 16 | INIT\ | Initialize the Printer | Host to Printer |
| Pin 17 | SLIN | Select Printer | Host to Printer |
| Pin 18-25 | GND | Ground | |

# RS-1284 BIDIRECTIONAL PARALLEL CABLE

The OKIPOS 150 Series Printer supports the IEEE P1284 Bidirectional Parallel Peripheral Interface Standard, modes 0 and 4. This provides for bidirectional link to the parallel port. Refer to *OKIPOS 150 Series Programmer's Guide* for further information.

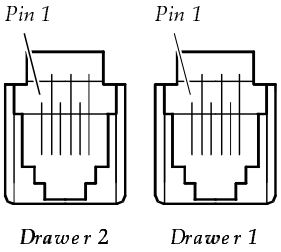
# CASH DRAWER PIN ASSIGNMENTS

***OKIPOS®/Epson®/ Axiohm®***

| Function | Drawer 1 | Drawer 2 |
|---|---|---|
| Drawer Drive + | Pin 4 | Pin 4 |
| Drawer Drive - | Pin 2 | Pin 5 |
| Status Signal | Pin 3 | Pin 3 |
| Status Ground | Pin 6 | Pin 6 |
| Frame Ground | Pin 1 | Pin 1 |
| No Connect | Pin 5 | Pin 2 |

***Ithaca®***

| Function | Drawer 1 | Drawer 2 |
|---|---|---|
| Drawer Drive + | Pin 4 | Pin 4 |
| Drawer Drive - | Pin 5 | Pin 1 |
| Status Signal | Pin 2 | Pin 2 |
| Status Ground | Pin 3 | Pin 3 |
| Frame Ground | Pin 6 | Pin 6 |
| No Connect | Pin 1 | Pin 5 |



# CLEANING AND ADJUSTMENTS

## CLEANING THE PRINTER

Remove paper dust periodically by using a vacuum cleaner or air compressor.

**Caution:** Do not use alcohol- or petroleum-based chemicals to clean the printer as these will damage the plastic parts. The carriage rack is particularly sensitive and will be permanently damaged if exposed to these chemicals. Take special care not to get the cleaner on any electronic components.

None of the internal parts of the printer require lubrication or routine maintenance. Apply a common cleaner such as Fantastik® or Formula 409® to a damp cloth and gently wipe the surface of the printer and keypad.

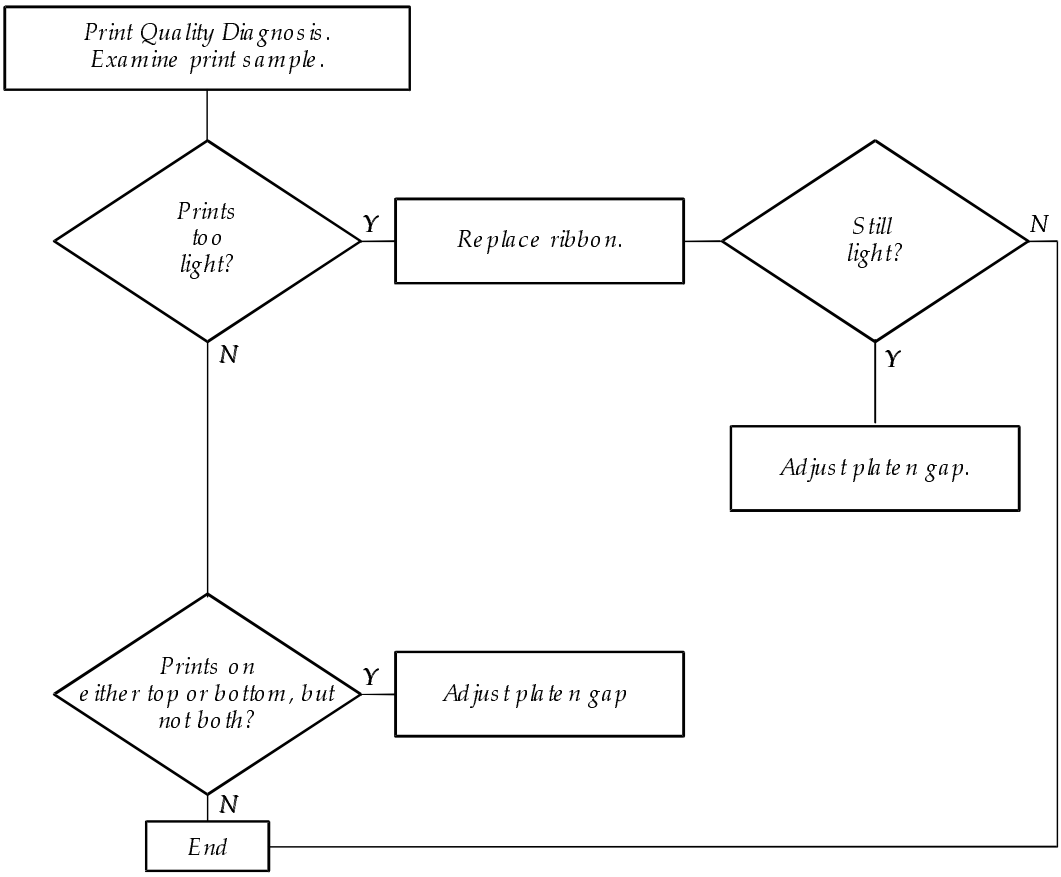
## MAKING ADJUSTMENTS

The adjustments described in this section are required to correct print head drag, print quality flaws, or the print mechanism.

If the print density on a print sample is consistent from top to bottom and the print head does not drag, no adjustment is necessary. If the print head drags or if the print sample is inconsistent, adjust the platen gap.

## DIAGNOSING THE PRINT QUALITY

Use the flowchart to determine which procedure to use to correct specific print problems.



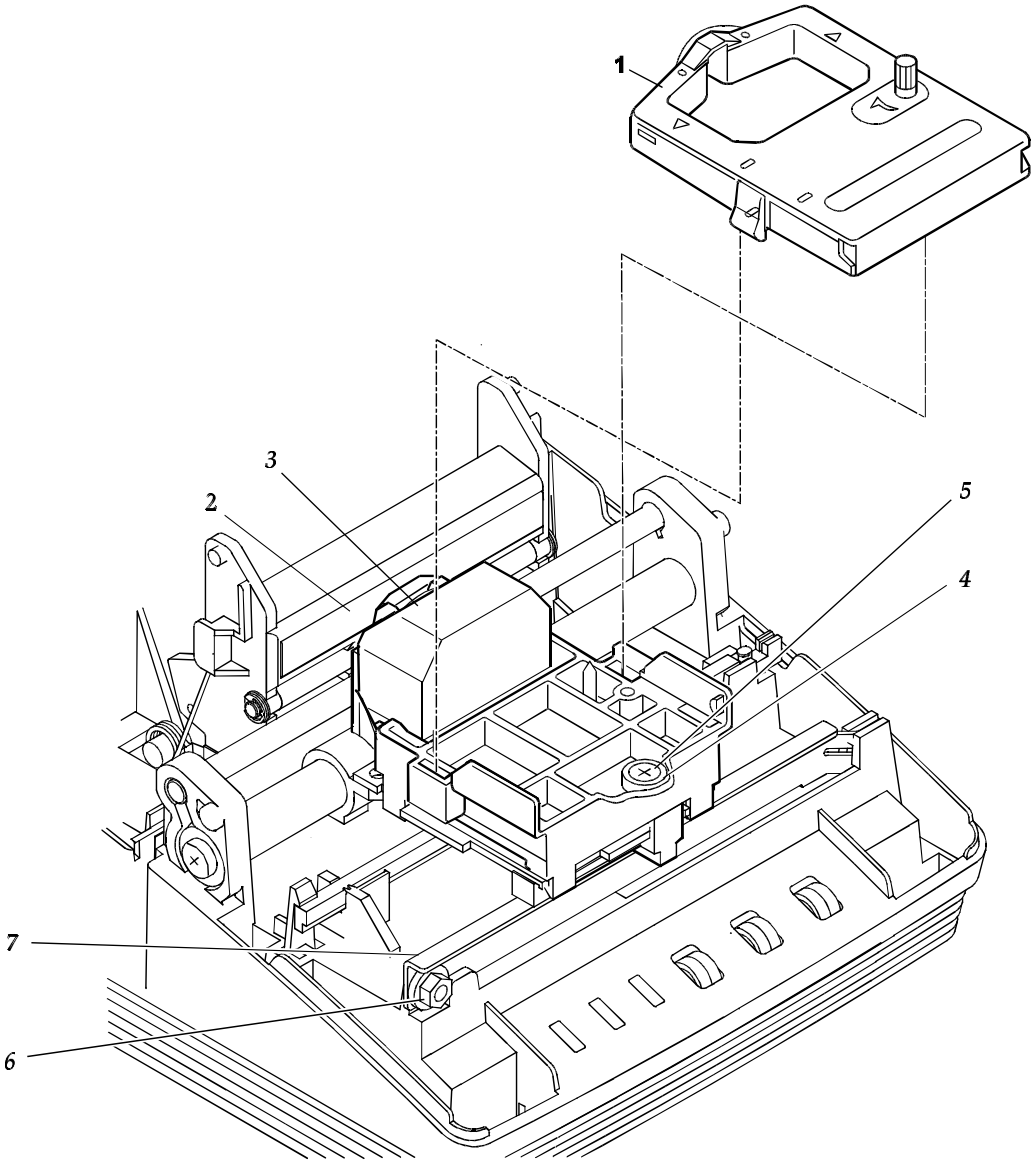

## NECESSARY TOOLS

**Caution:** Using the wrong tools may cause personal injury or damage the printer. Be sure to use the proper tools when maintaining or servicing the 150 Series Printer.

The following list provides the necessary tools needed to properly maintain the 150 Series Printer.

- #1 Phillips Screwdriver
- Thickness Gauge: 0.014 inch
- Paper Clip
- Nut Driver

# ADJUSTING THE PLATEN GAP




1. Turn off the printer.
2. Remove all paper from the printer.
3. Remove the Ribbon Cassette (1).
4. Move the Print head (3) all the way to the right.
5. With a 0.014 inch thickness gauge, check the air gap between the Platen (2) and the Print head (3). The air gap should measure 0.356 ± 0.050 mm (0.014 ± 0.002 in.).
6. If an adjustment is needed, press down on the outer ring of the Adjusting Gear (4) with the straightened end of a paper clip, and turn

the Adjusting Screw (5) with a #1 Phillips screwdriver until the gap measures 0.406 ± 0.0762 mm (0.014 ± 0.002 in.).

Turn the Adjusting Gear (4) counterclockwise to decrease the air gap, clockwise to increase the air gap.

7. Move the Print head (3) to the left end of the Platen (2), and check the air gap as in step 5.
8. If an adjustment is needed, loosen the nut (6) at the left end of the Carriage Support Rail (7).

   Move the rail up or down to decrease the air gap.
9. Retighten the nut (6).
10. Recheck the air gap at both sides of the Platen (2).

# ASSEMBLY/DISASSEMBLY

## PRECAUTIONS FOR DISASSEMBLY

Before disassembling any part of the printer, be sure the power is turned off. Disconnect the AC power cord, the communication cable, and the cash drawer cables.

**Caution:** Controller board and keypad PC board can easily be damaged by static electricity. Observe ESD precautions. Wear a grounded wrist strap, and use a static mat or other protected work surface. Do not place the printed circuit boards directly on the printer or floor.

## NECESSARY TOOLS

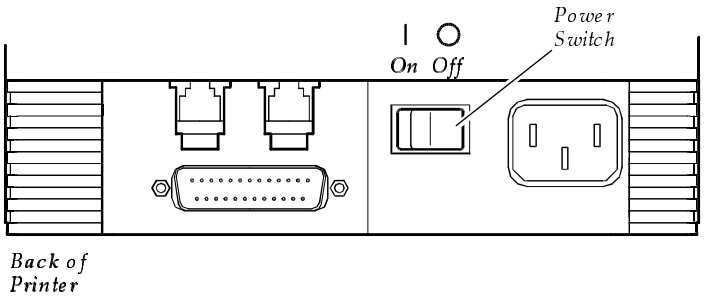
**Caution:** Using the wrong tools may cause personal injury or damage the printer. Be sure to use the proper tools when maintaining or servicing the printer.

The following list provides the necessary tools to properly maintain the 150 Series Printer.

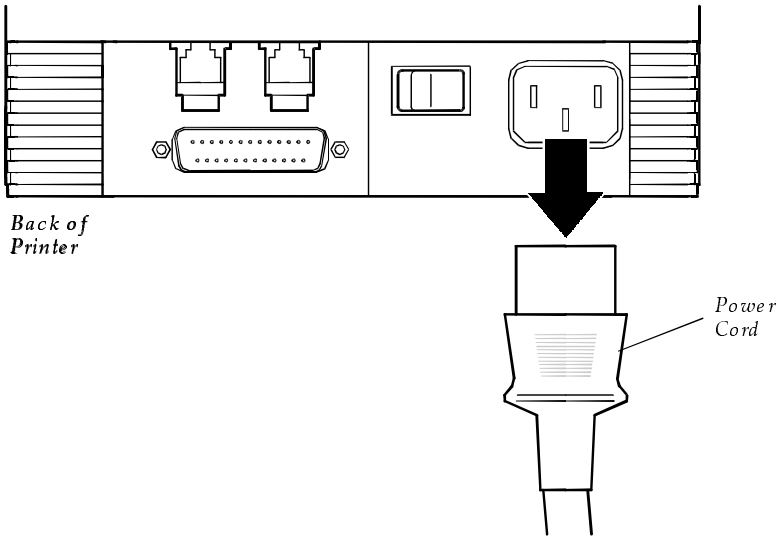
- Screwdrivers
  - #0 Phillips
  - #1 Phillips
  - #2 Phillips
  - Small Flat Blade
  - Large Flat Blade
- Nut Drivers
  - 3 mm
- Miscellaneous
  - Thickness Gauge: 0.014 inch
  - Hobby Knife
  - Small Needle-nose Pliers

# DISCONNECTING THE POWER CORD

**Caution:** The printer must be grounded through the three-prong power connector. Do not use a ground defeating adapter.




1. Be sure the power switch is turned off.

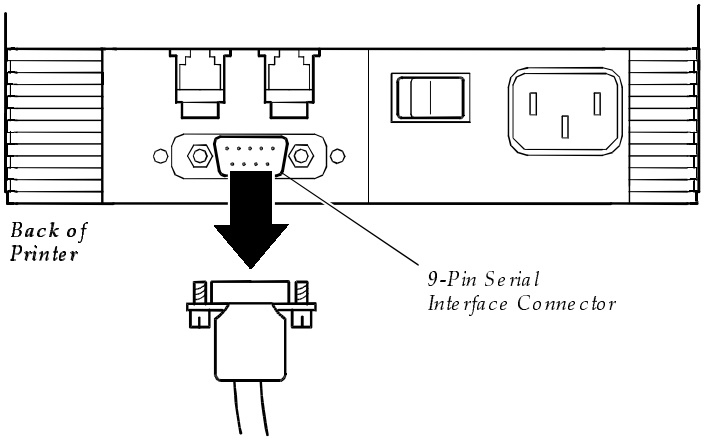



2. Disconnect the external AC power source and the power cord from the power socket located on the back of the printer.

# DISCONNECTING THE COMMUNICATION CABLE

Depending on the interface your system uses, disconnect either the serial or parallel communication cable from the connector on the back of the printer.

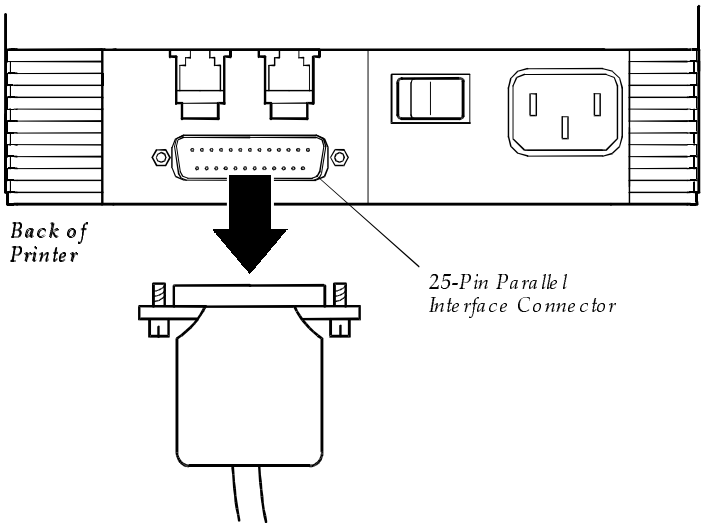
## DISCONNECTING THE SERIAL CABLE




1. Turn the printer and the host system or PC off.
2. Loosen the two mounting screws on each side of the cable connector.
3. Disconnect the 9-pin serial interface cable from the connector located on the back of the printer.

   Refer to the “Communication Interfaces and Cash Drawer Connectors” for information on the serial cable requirements.

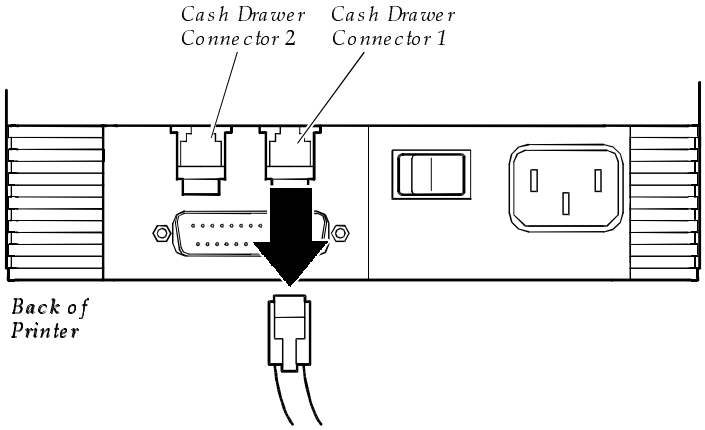
## DISCONNECTING THE PARALLEL CABLE




1. Turn the printer and the host system or PC off.
2. Disconnect the 25-pin parallel interface cable from the connector located on the back of the printer.

Refer to the “Communication Interfaces and Cash Drawer Connectors” for information on the parallel cable requirements.

## DISCONNECTING THE CASH DRAWER CABLES



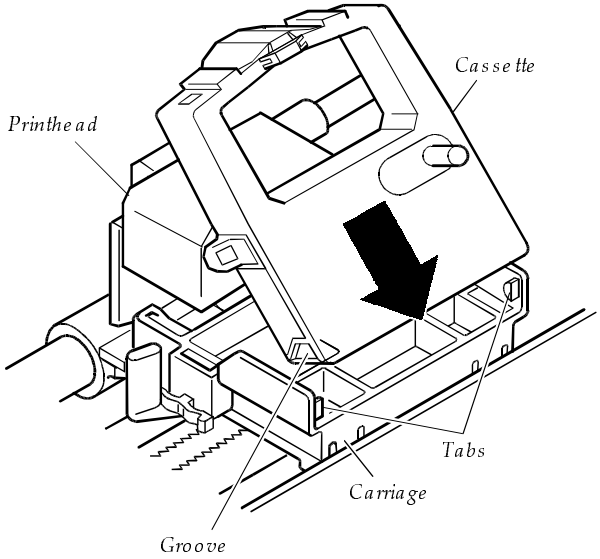

1. Turn the printer off.
2. Disconnect the cash drawer cable to the connectors located on the back of the printer.

   Contact your Oki dealer for an adapter. See “Contacting Oki” on page 7.

# REMOVING THE RIBBON CASSETTE

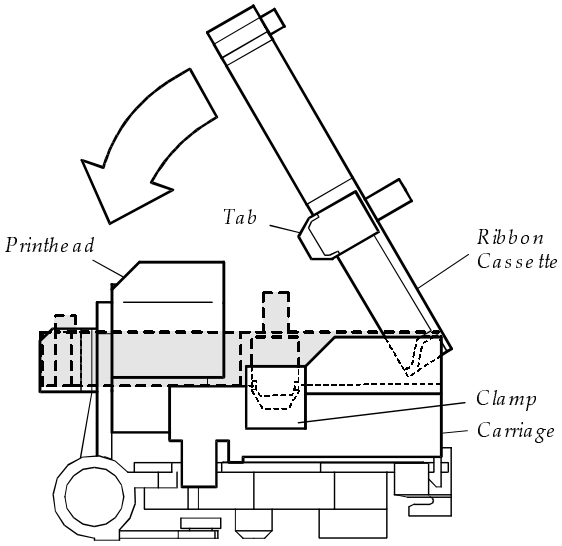
1. Grasp both sides of the cassette. Lift and rock the cassette towards you. Do not pull the cassette straight up.

# INSTALLING THE RIBBON CASSETTE

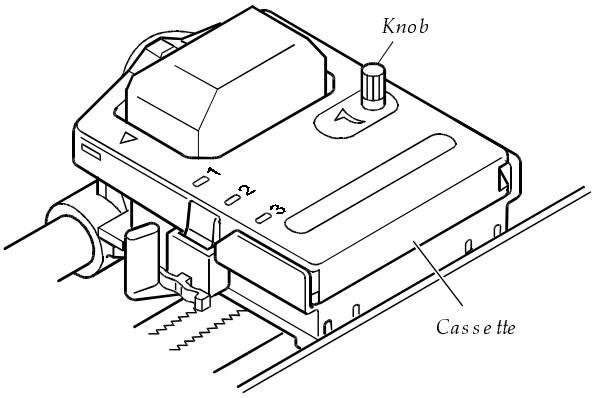



1. Holding the ribbon cassette with the mylar guide facing away from you, insert the front of the cassette into the carriage.

   **Note:** It is important to fit the front edge of the ribbon cassette into the carriage first. Do not place the ribbon cassette flat on the carriage.




2. Rock the ribbon cassette forward, toward the print head, and then press down on it until the tabs on the cassette snap into the clamps on the carriage.



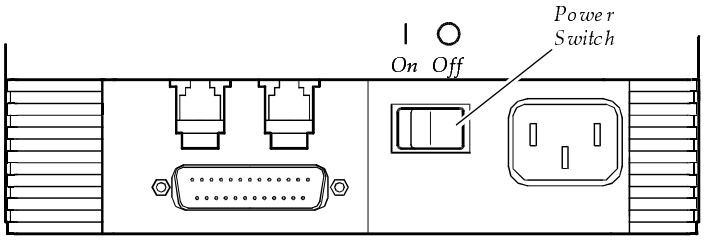

3. Tighten the ribbon by turning the knob on the cassette clockwise.
4. Close the cassette cover.
5. Turn the printer back on (if already installed).

# PRINT HEAD

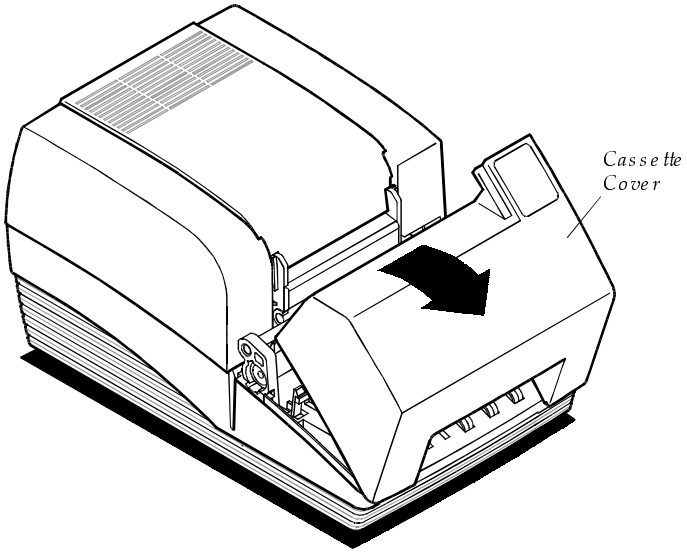
Replace the print head when the characters are consistently misprinting.

## REMOVING THE USED PRINT HEAD

**Caution:** The print head can get very hot. Turn the printer off, and allow the print head to cool for at least three minutes before replacing it.

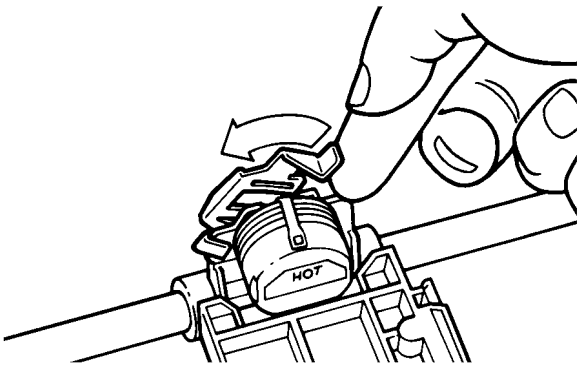



1. Turn the printer off.

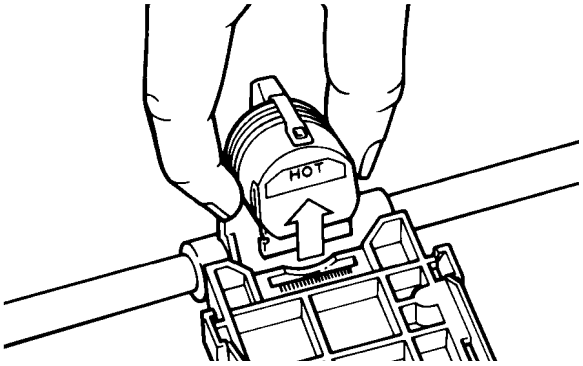



1. Open the cassette cover.
2. Remove the ribbon cassette.

**Note:** In the following illustrations, the heatsink is not shown for clarity.



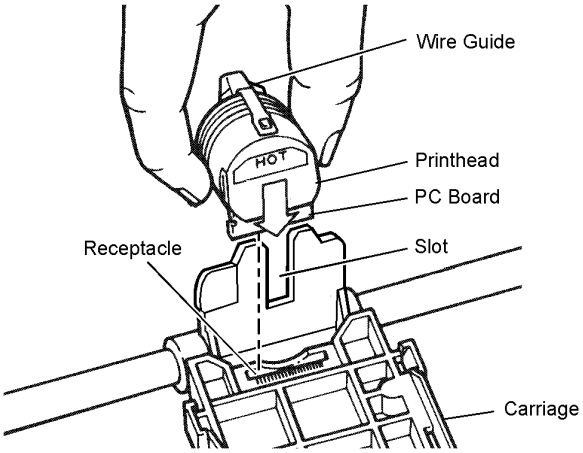

3. Open the print head clip by grasping the tab on the right side of the clip and rotating it from right to left.



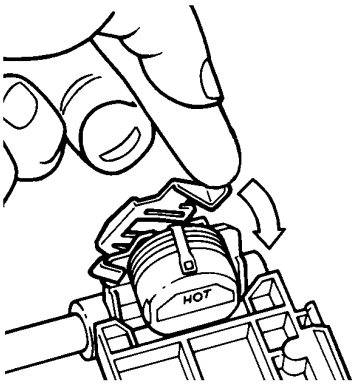

4. Lift the print head straight up out of the carriage.

## INSTALLING THE NEW PRINT HEAD

**Note:** In the following illustration, the heatsink is not shown for clarity.

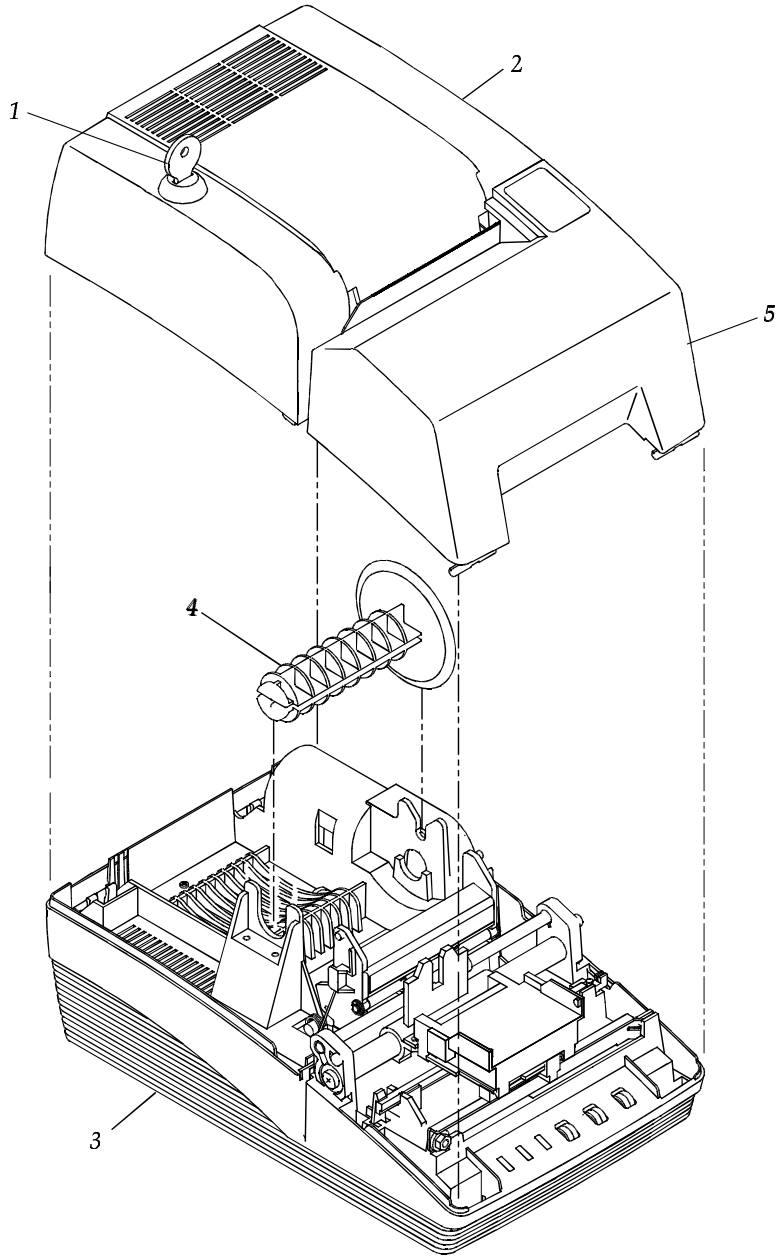



1. Slide the black wire guide on the back of the print head into the slot on the carriage. Make sure the tabs on the wire guide hold the print head against the carriage.
2. Align the PC board on the bottom of the print head with the receptacle on the carriage.
3. Press the print head into the carriage. Do not force the PC board into the receptacle. Make sure it is lined up properly.



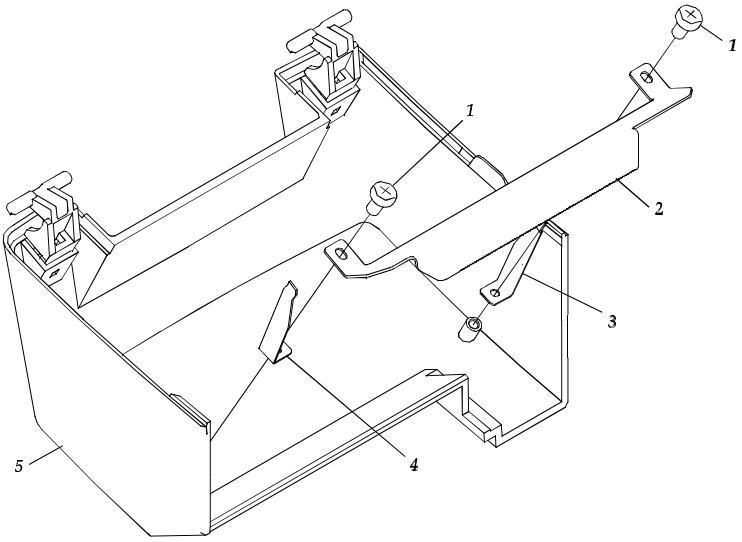

4. Close the print head clip by rotating it from left to right and latching it into place.
5. Replace the ribbon cassette, and then close the cassette cover.

## REMOVING THE COVERS



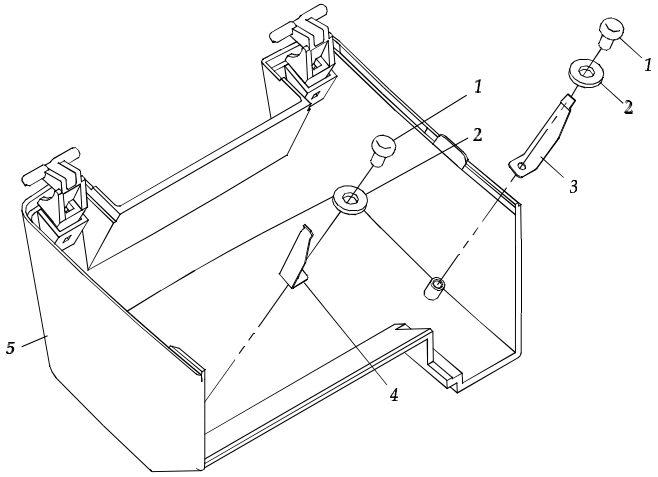

1. Unlock the optional journal lock (1) located on the paper cover (2).
2. Open the paper cover (2) until it unsnaps from the base cabinet (3).
3. Remove the take-up spindle (4).
4. Open the cassette cover (5) until it unsnaps from the base cabinet (3).

## CASSETTE COVER WITHOUT KNIFE



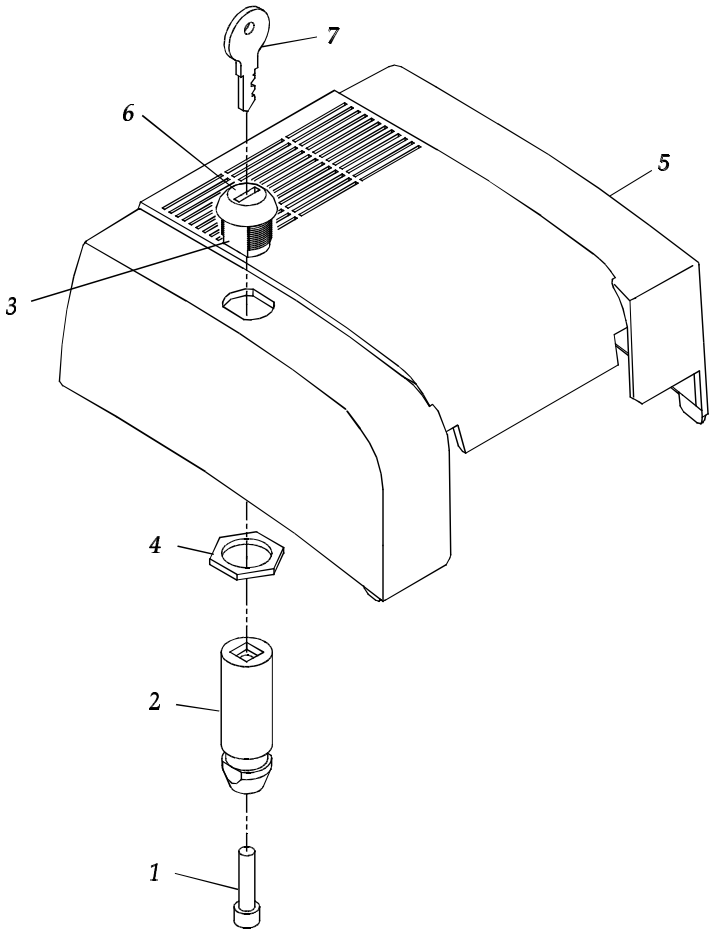

1. Remove the paper covers. (See page 32).
2. Unscrew the two screws (1) holding the tear bar (2) and the right and left detents (3, 4) to the cassette cover (5).
3. Remove the tear bar (2) and the right and left detents (3,4).

## CASSETTE COVER WITH KNIFE




1. Remove the paper covers. (See page 32).
2. Unscrew the two screws (1) holding the two flat washers (2) and the right and left detents (3, 4) to the cassette cover (5).
3. Remove the two washers (2) and the right and left detents (3,4).

# PAPER COVER WITH JOURNAL LOCK

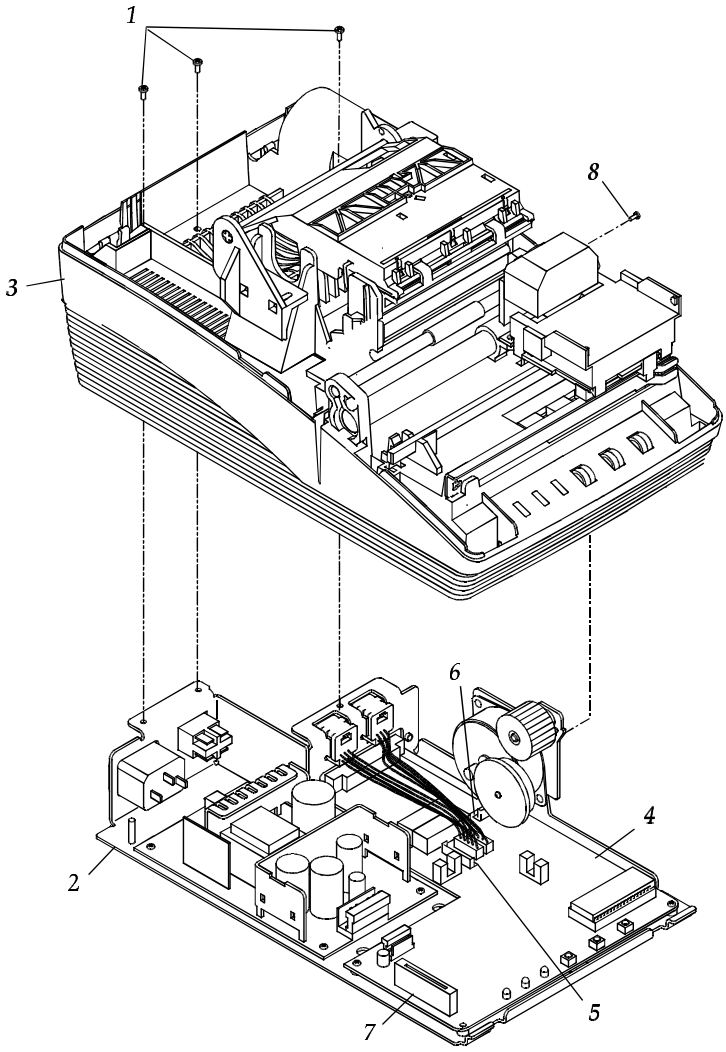



1. Remove the paper covers. (See page 32).
2. Unscrew the screw (1) and remove the journal lock extension (2) from the lock set (3).
3. Unscrew the lock set hex nut (4) and remove the lock barrel (3) from the paper cover (5).

**Installation notes:**

1. Position the key opening in the tumbler assembly (6) before inserting the key (7) as shown in the illustration.
2. Insert the key into the tumbler assembly (6) before inserting the tumbler assembly into the lock barrel (3). Position the key teeth as shown in the illustration.
3. Install lock barrel (3) in the paper cover (5) with in notch towards the outside.

# SEPARATING THE ELECTRONICS BASE FROM THE MECHANISM BASE

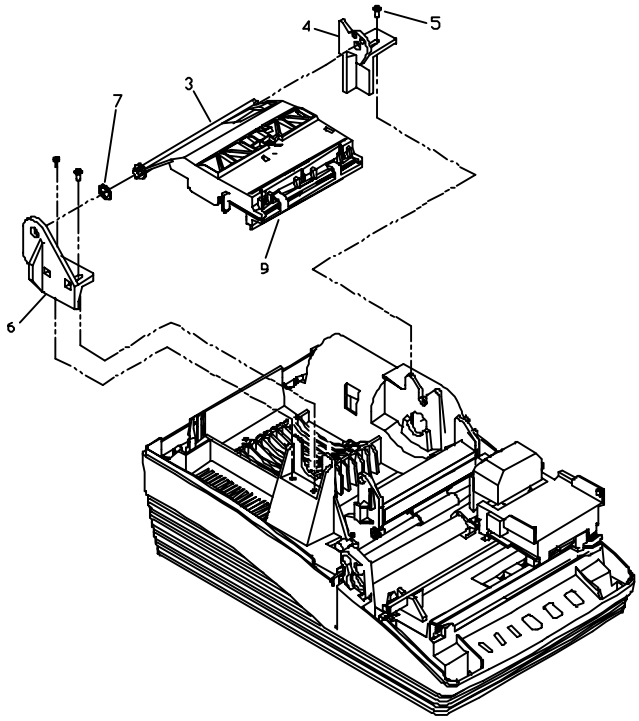



1. Remove the paper covers. (See page 32).

2. Unscrew the three screws (1) holding the electronic base assembly (2) to the mechanism base assembly (3) and remove the screw (8) from the right side of the mechanism base assembly (3).
3. Raise the back of the mechanism base assembly about 45 degrees and disconnect the following harnesses and cable from the controller board assembly (4), auto-cutter harness (5), take-up motor harness (6), and the head cable (7). Refer to the chart below for connector locations on the controller board.
4. Finish removing the mechanism base assembly (3) from the tab in the front of the electronic base assembly (2).

| Harness/Cable | Controller Board Locations |
|---|---|
| Take-up Motor Harness | CN6 |
| Head Cable | CN8 |
| Auto Cutter | CN9 |

# KNIFE OPTION (MODEL 151)

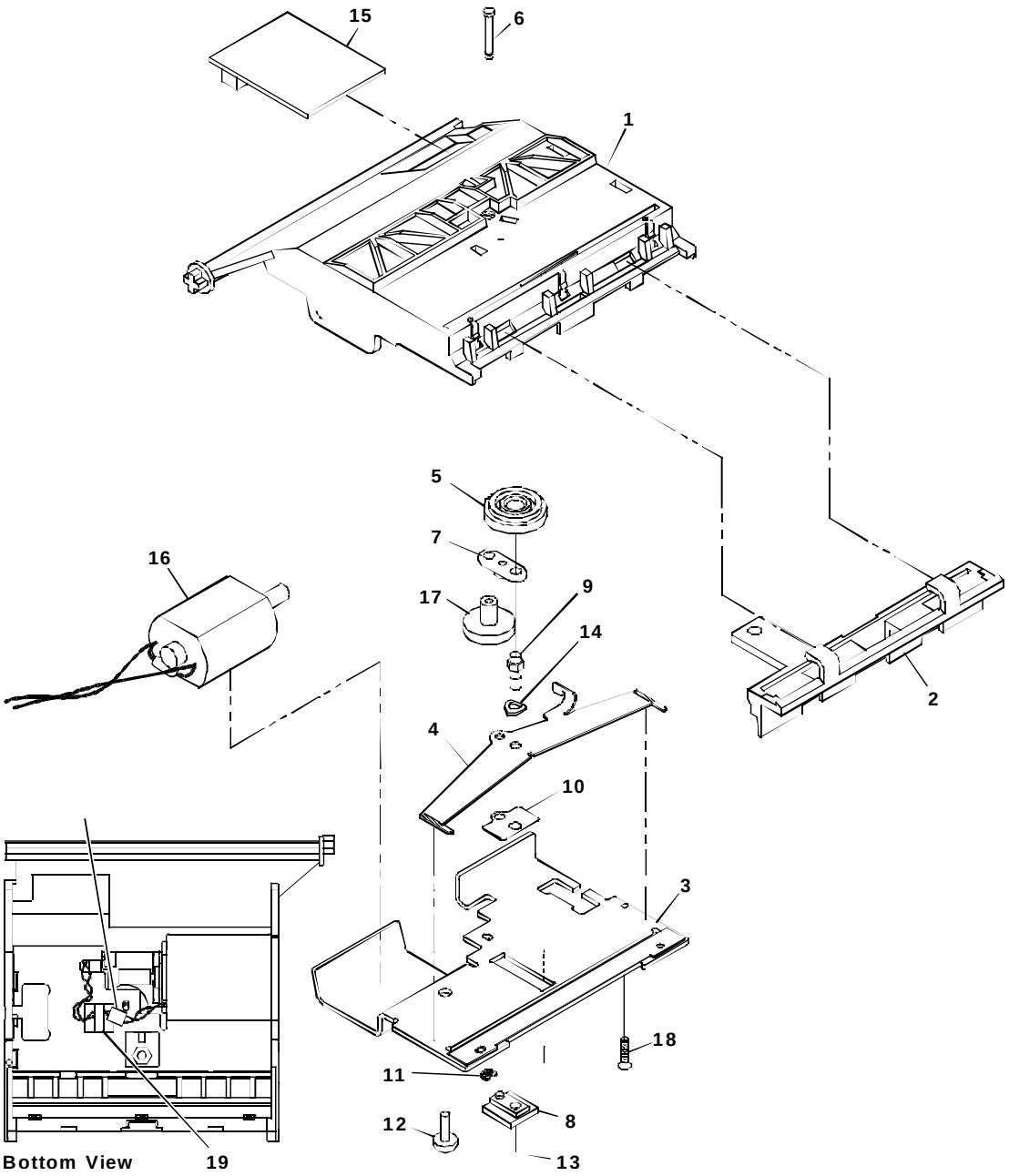



1. Remove the paper covers. (See page 32).
2. Remove the screw (1) holding the spring (2) to the cutter assembly (3) and unhook the spring from the right-hand mount bracket (4).
3. Remove the screw (5), and slide the right-hand mount bracket (4) to the right, and lift out.

   This will free the cutter from the left-hand mount bracket (6). Be careful not to loose the knife spacer (7) located between the cutter and the left-hand mount bracket.
4. Loosen nut (9) from the bottom of the cutter and unplug the knife ground cable (8).

   If you are replacing the knife ground cable (8), unplug the connector from the controller board. (See page 36).

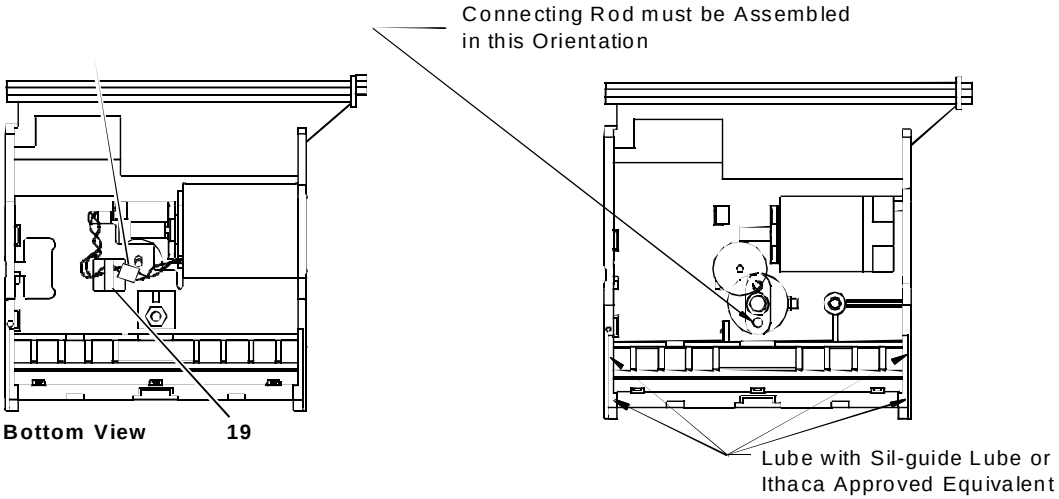
# DISASSEMBLE THE KNIFE



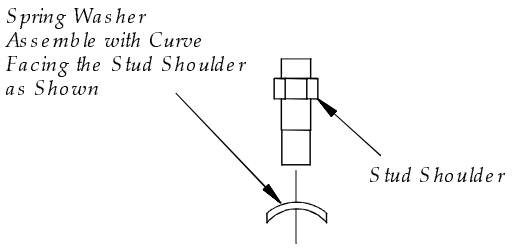

**Caution:** The knife blade is extremely sharp.

1. Turn the cutter assembly upside down, remove the screw (12), and pullout the knife guide (2).
2. Remove the screw (18) and the E-ring (11), and separate the knife plate assembly (3) from the knife frame (1).
3. Remove the connecting rod (7) and the compound gear (17) from the knife pin (6). Remove the knife gear (5) and the knife pin from the knife frame.
4. Disconnect the knife motor connector (16) from the PCB assembly (15). Unthread the knife motor harness from the wire retainer (19), and remove the knife motor.
5. Pull the PCB assembly out of the knife frame (1).
6. To removes the knife blade (4), unscrew the nut (13) from the drive stud. Remove the slider pad (8), spring washer (14), knife blade, and Teflon film (10) from the drive stud.

**Installation Notes:**

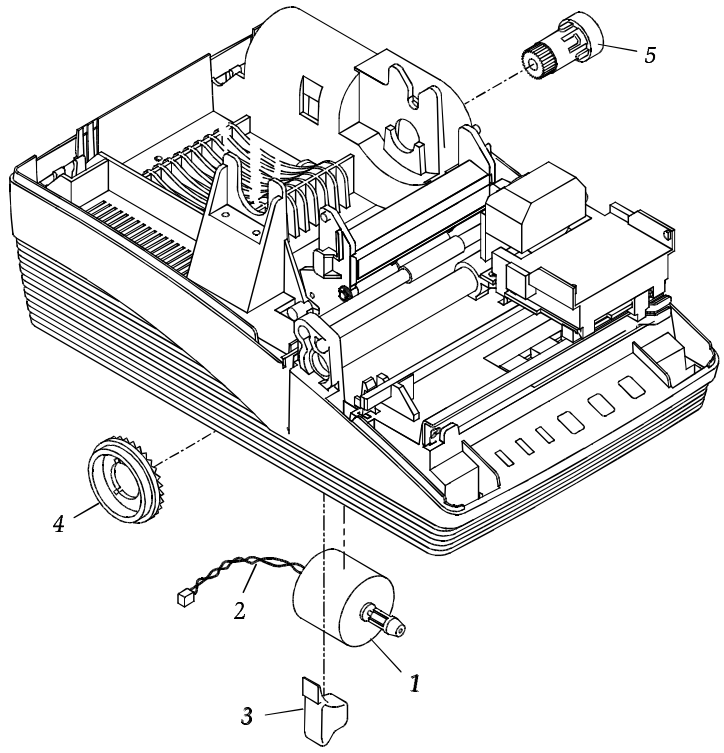



1. Refer to the above illustration for the correct orientation of the connecting rod. Lubricate four points on the knife frame with Sil-guide or an Oki approved equivalent.

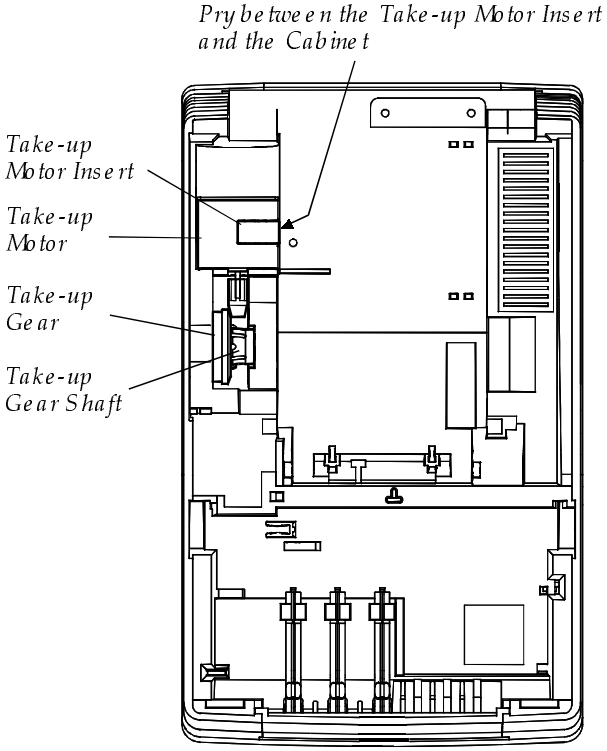



2. Install the spring washer with the curve facing the stud shoulder.

# TAKE-UP MOTOR ASSEMBLY KIT (MODELS 152 and 153)

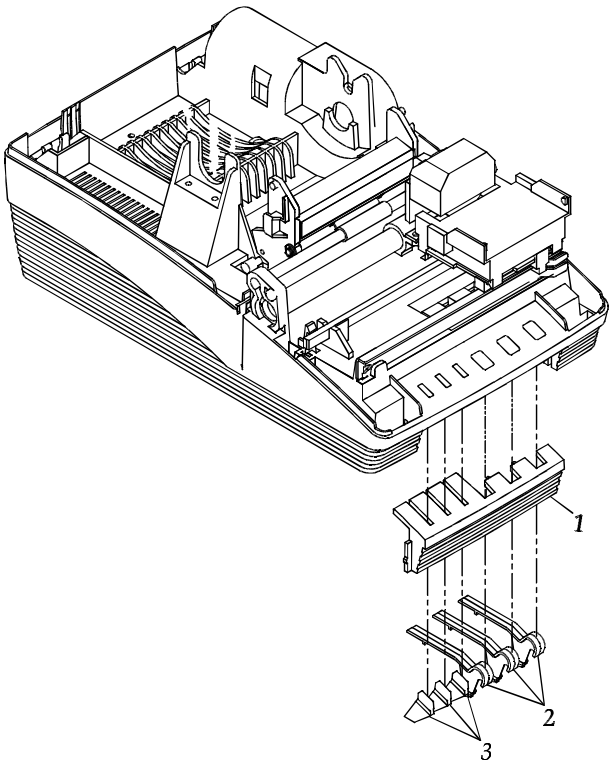



1. Separate the electronics base from the mechanism base. (See page 36).
2. Turn the mechanism base assembly over and from the right push the take-up shaft gear (5) out of the base cabinet. Lift out the take-up gear (4).



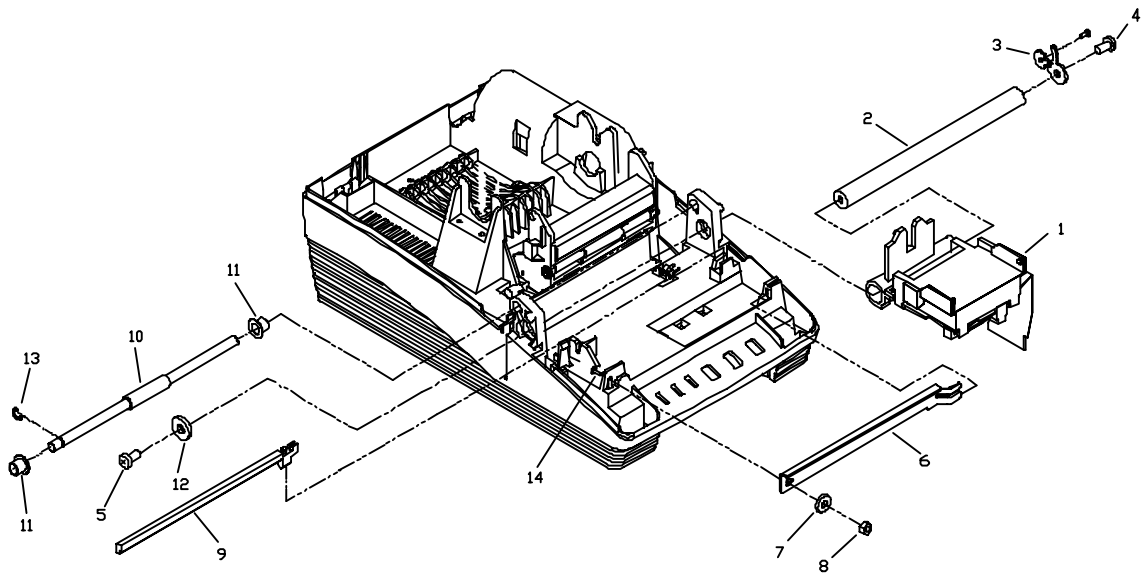

3. With a flat head screwdriver, snap the take-up motor insert (3) out of the base cabinet, and lift out the take-up motor (1 and 2).

# SWITCH ASSEMBLY AND LIGHT PIPES




1. Separate the electronics base from the mechanism base. (See page 36).
2. Turn the mechanism base over, and unsnap the base filler (1) from the base cabinet.
3. Remove the three keypad lightpipes (3) from the rectangular openings on the right side of the cabinet (base upside down).
4. Remove the three buttons (2) from the rectangular openings on the left side of the cabinet (base upside down).

# PRINT MECHANISM

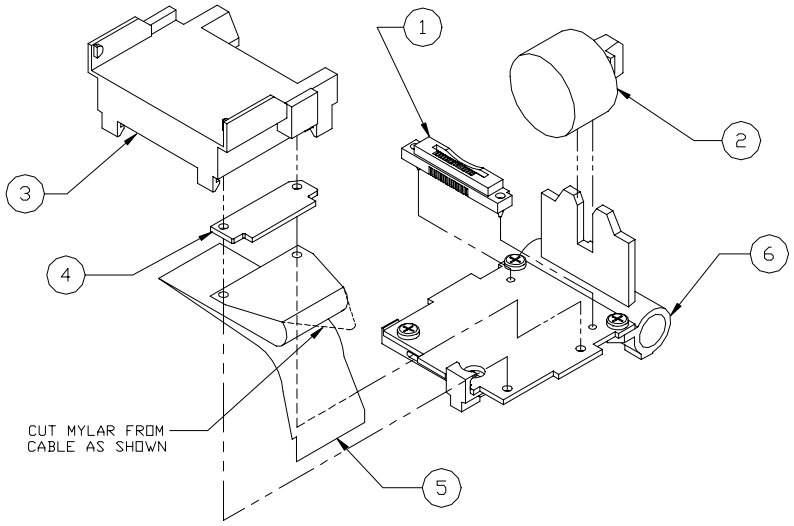



1. Separate the electronics base from the mechanism base. (See page 36).
2. Unscrew the screw (4), and remove the shaft retainer (3).
3. Remove the screw (5) and washer (12) from the left end of the carriage shaft (2). Pull the carriage shaft out.
4. Remove the C-ring retainer (13) from the feed shaft (10). Slide the feed shaft to left until right end of the shaft clears the base cabinet, and pull the shaft out. Remove and save both feed shaft bearings (11).
5. Remove the nut (8), washer (7), and screw (14). Slide the carriage rail (6) out. The ground strap can now be removed.
6. Lift out the carriage assembly (1). Be careful pulling the ribbon cable out of the base cabinet.
7. Release the tab on the left side of the cabinet, and remove the space rack (9).

**Installation Notes:**

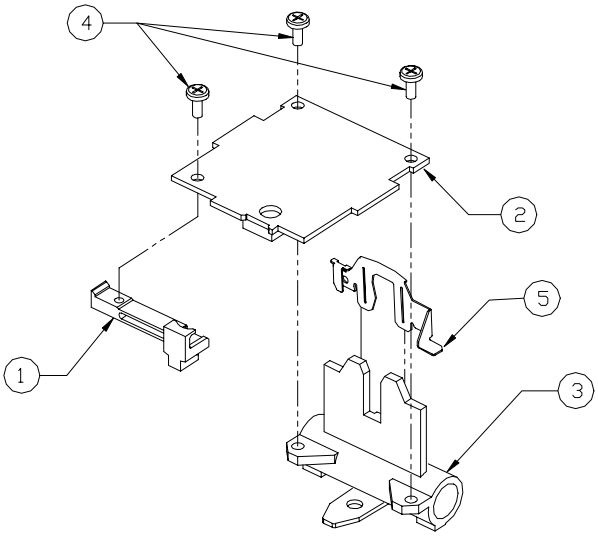
Adjust the platen air gap. (See page 22).

# CARRIAGE ASSEMBLY



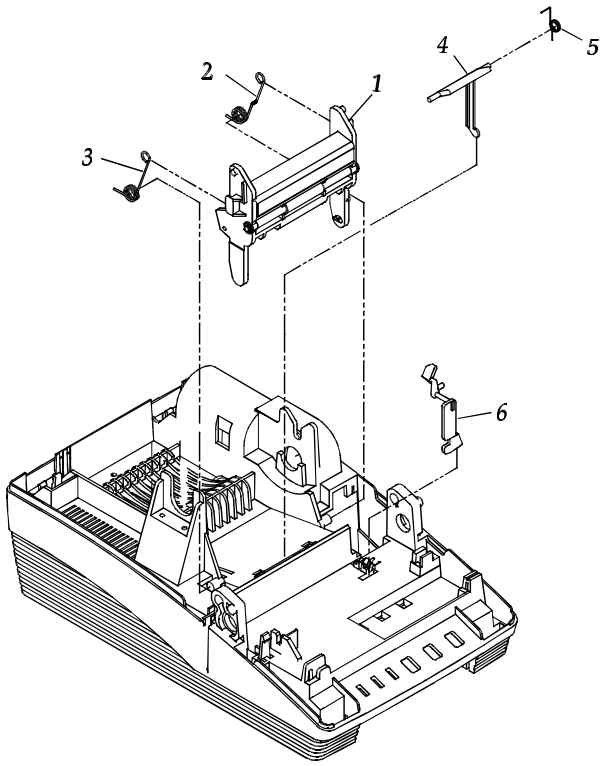

1. Disassemble the print mechanism. (See page 44).
2. Remove the printhead. (See page 30).
3. Release the four tabs holding the ribbon feed gear assembly (3) to the carriage motor assembly (6). Use caution not to separate the ribbon feed gear assembly parts.
4. Remove the printhead connector (1).
5. Remove the head cable (5) and the rubber pressure contact (4) from the bottom of the ribbon feed gear assembly (3).

# CARRIAGE MOTOR ASSEMBLY



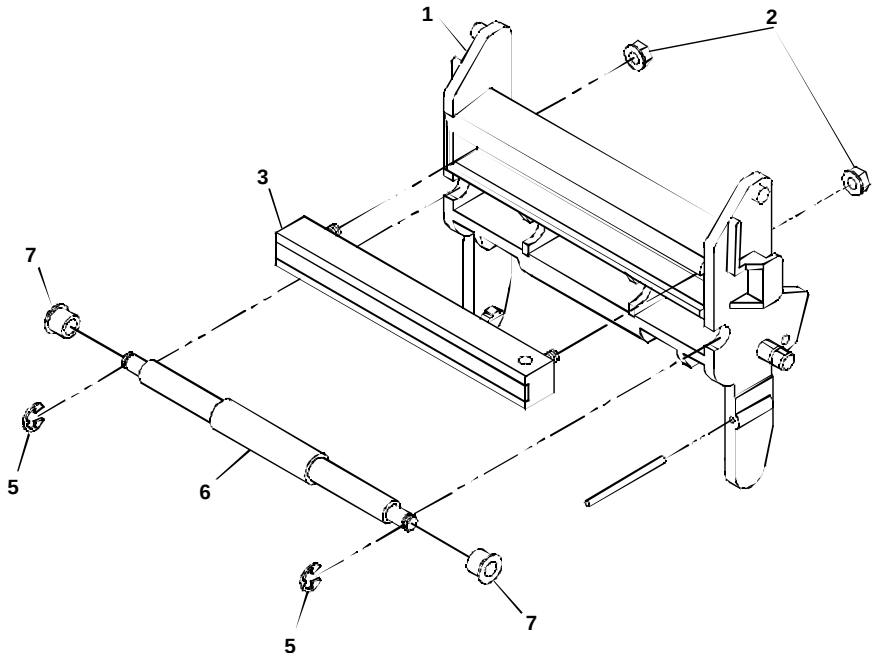

1. Disassemble the carriage assembly. (See page 45).
2. To remove the printhead clamp (5), gently pry the back of the clamp over the pin on the back of the carriage roller (3).
3. Remove the front screw (4), and take off the slider (1).
4. Remove the back two screws (4) to separate the space motor assembly (2) from the carriage roller (3).

# FORMS COMP



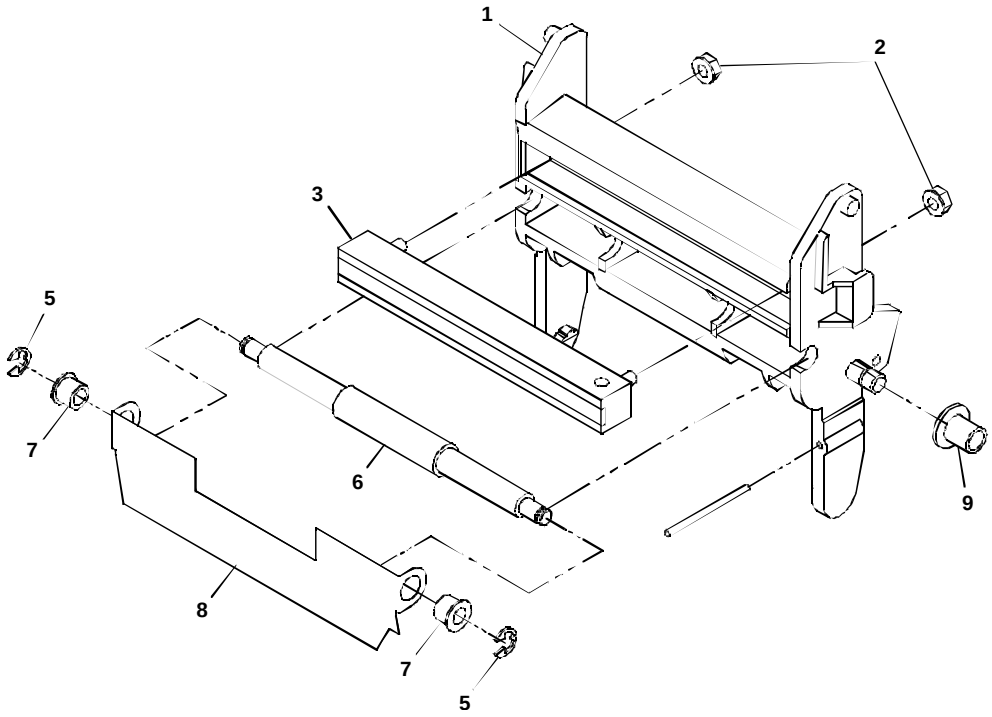

1. Remove the print mechanism. (See page 44).
2. Release the left spring (3) from the tab on the left side of the forms comp assembly (1).
3. Release the right spring (2) from the tab on the right side of the forms comp assembly (1).
4. Turn the base cabinet over and unsnap the forms comp assembly (1) from the cabinet. The tab slots are located near the center of the base cabinet.
5. Turn the base cabinet back over and lift the forms comp assembly (1) out.
6. Unsnap the paper out flag (4) out of the base cabinet. Be careful not to lose the paper exhaust spring (5).
7. Unsnap the validation flag (6) from the base cabinet.

# DISASSEMBLE THE FORMS COMP (MODELS 151 and 152)



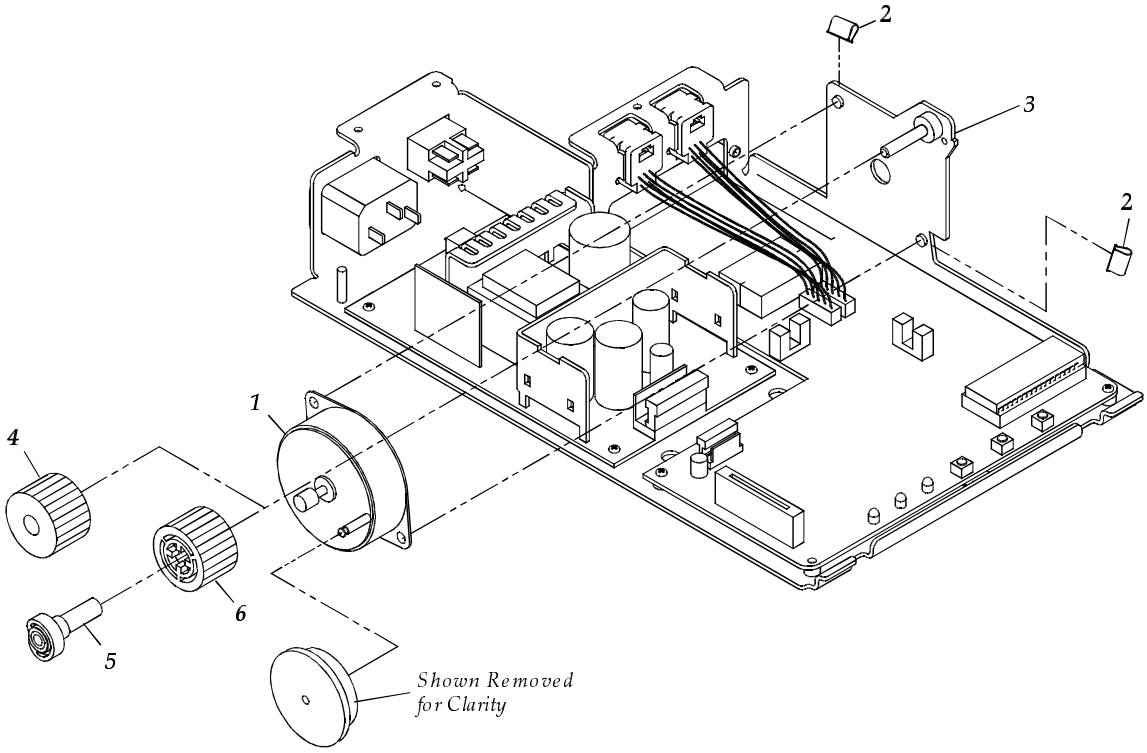

1. Remove the forms comp assembly. (See page 47).
2. Remove the two nuts (2) from the back of the forms comp frame (1). The platen insert (3) is now free.
3. Release the ‘E’ ring keepers (5), and remove the two bearings (7) from each end of the pressure roller (6).
4. Slide the pressure roller (6) to the left until it clears the right side of the forms comp frame (1) and remove.

# DISASSEMBLE THE FORMS COMP (MODEL 153)




1. Remove the forms comp assembly. (See page 47).
2. Remove the two nuts (2) from the back of the forms comp frame (1). The platen insert (3) is now free.
3. Release the ‘E’ ring keepers (5), and remove the two bearings (7) from each end of the pressure roller (6).
4. Remove the forms comp plate (8).
5. Slide the pressure roller (6) to the left until it clears the right side of the forms comp frame (1) and remove.
6. Pull the bearing (9) off the right side of the forms comp frame (1).

# LINEFEED MOTOR AND GEARS

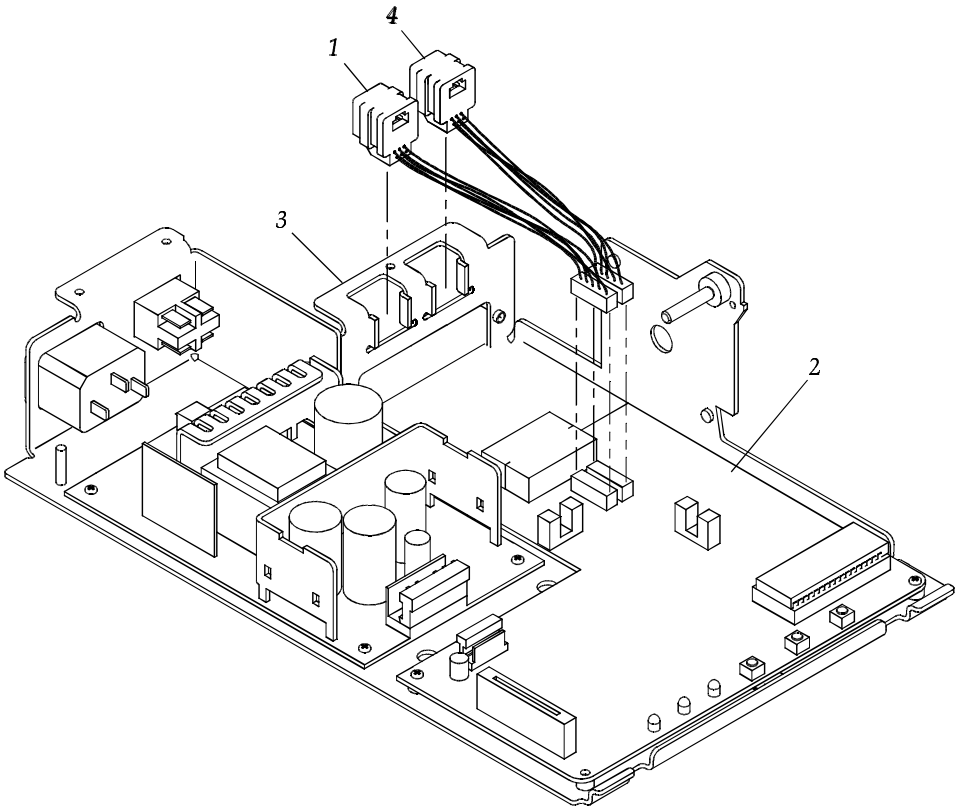



1. Separate the electronics base from the mechanism base. (See page 36).
2. Remove the linefeed motor (1) by prying off the two retaining clips (2) holding the motor to the electronics base (3).
3. Models 151 and 152 only. Pull off the idler gear (4) from the electronics base.
4. Model 153 only. Remove the cam shaft (5) from the clutch gear assembly (6), and remove the clutch gear assembly from the electronics base. Mark the side of the clutch gear that was facing the electronics base.

**Installation Notes:**

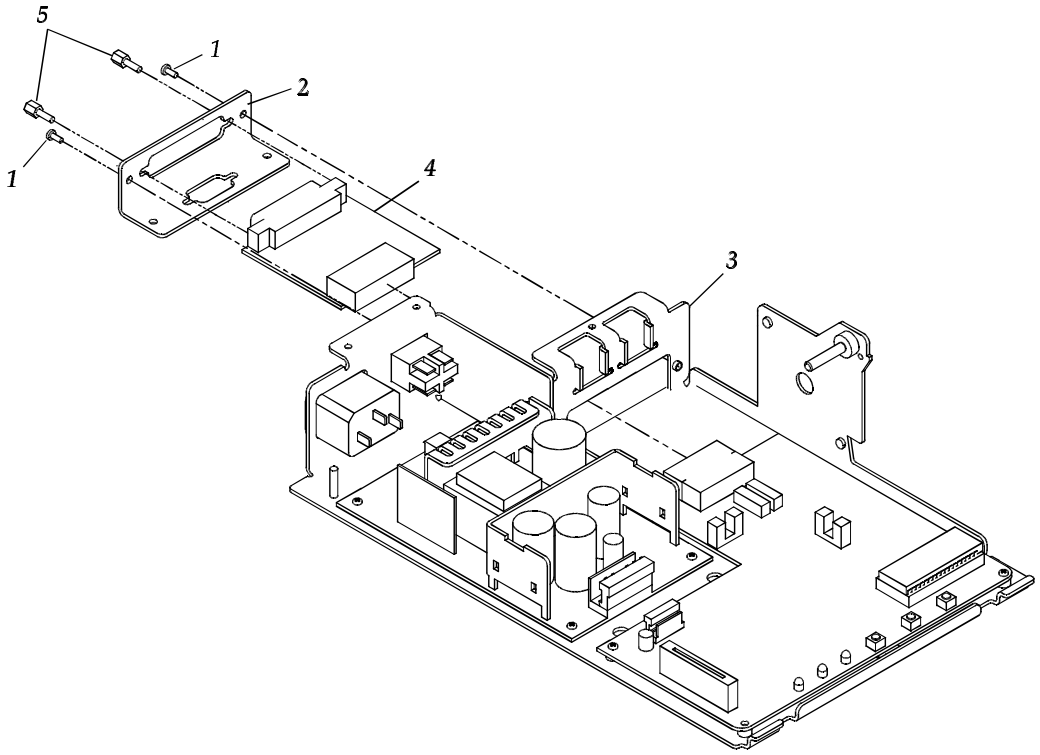
Model 153 only. After installing the clutch shaft and clutch gear assembly, check clutch gear orientation. Apply light pressure to the clutch gear assembly, and turn the clutch shaft. Turning the clutch shaft from top to back should turn the clutch gear. When turning the clutch shaft from top to front, the clutch gear should not rotate.

# CASH DRAWER HARNESSES



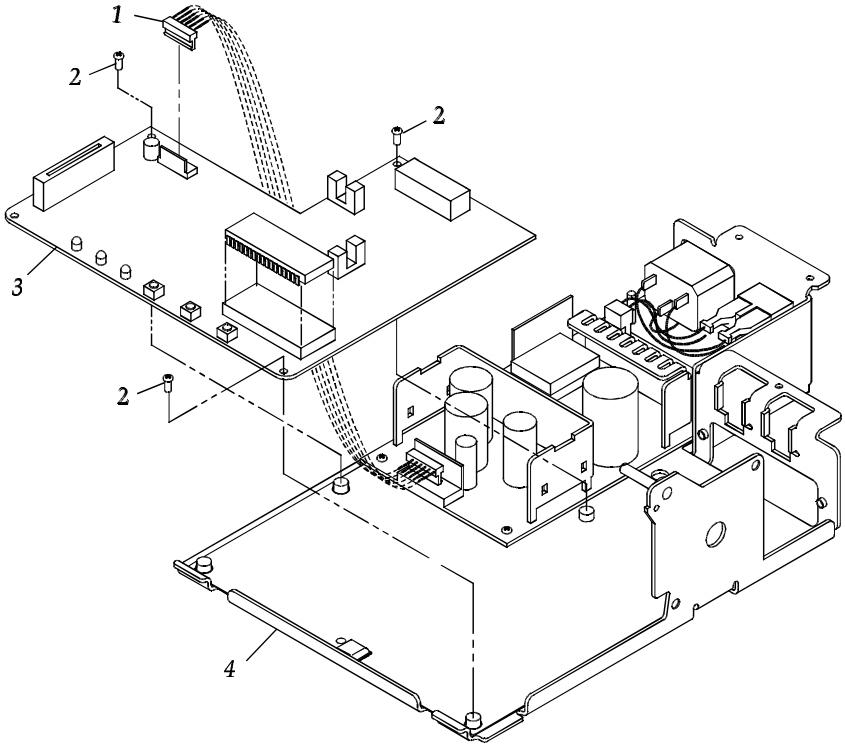

1. Separate the electronics base from the mechanism base. (See page 36).
2. Disconnect the cash drawer harness #1 (1) from the connector CN11 on the controller board (2).
3. Pull the harness up and out of the electronics base (3).
4. Disconnect the cash drawer harness #2 (4) from the connector CN12 on the controller board (2).
5. Pull the harness up and out of the electronics base (3).

# PARALLEL/SERIAL COMMUNICATION PC BOARDS



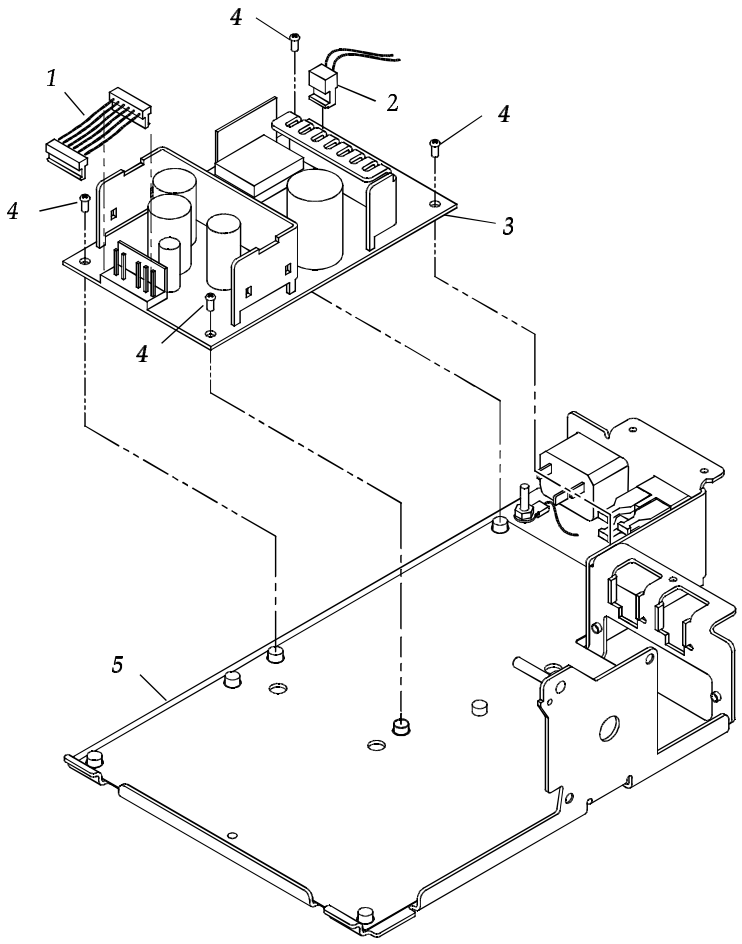

1. Separate the electronics base from the mechanism base. (See page 36).
2. Remove the cash drawer harnesses. (See page 51).
3. Unscrew the two screws (1) holding the mounting plate (2) to the electronics base (3).
4. Pull the mounting plate, with the communications board (4) attached, out of the back of the electronics base.
5. Unscrew the two jackscrews (5). Separate the communications board from the mounting plate.

# CONTROLLER PC BOARD



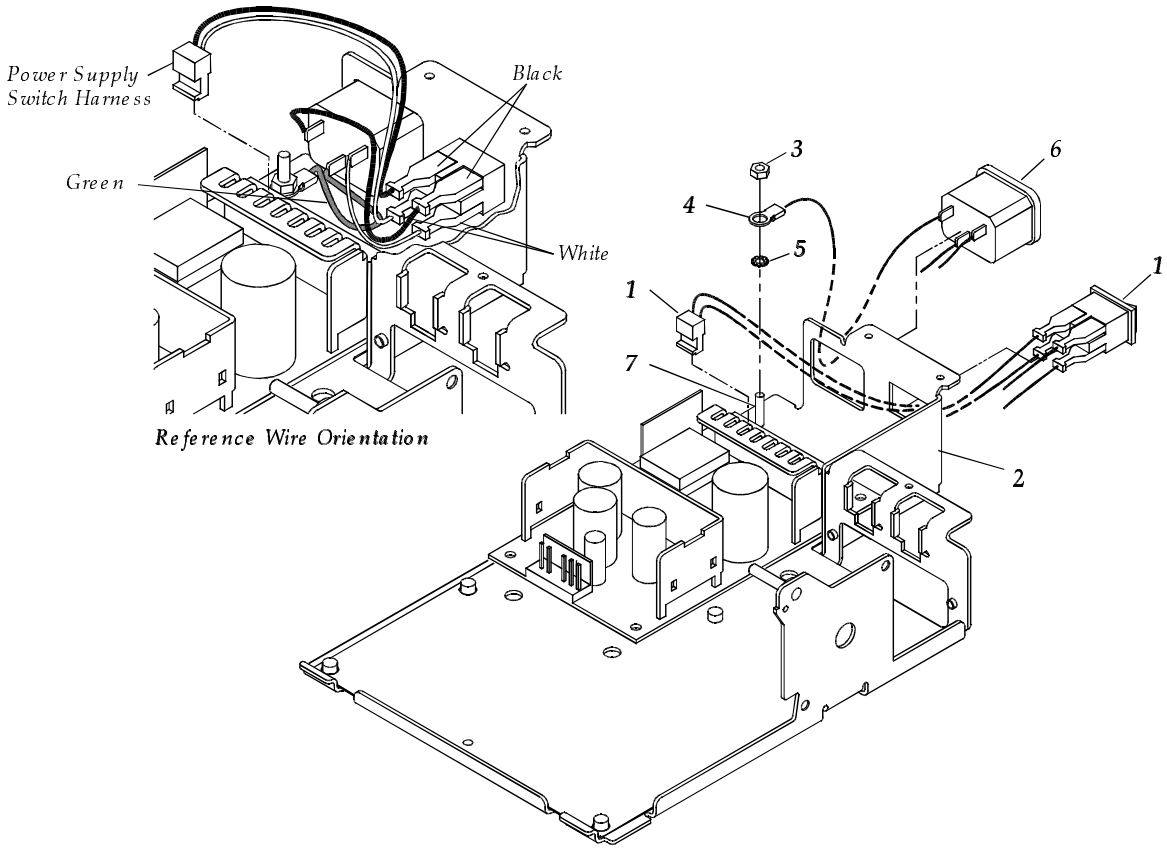

1. Separate the electronics base from the mechanism base. (See page 36).
2. Remove the linefeed motor. (See page 50).
3. Remove the cash drawer harnesses. (See page 51).
4. Disconnect the DC power harness (1) from the connector CN10 on the controller board (3).
5. Unscrew the three screws (2) holding the controller board to the electronics base (4).

# POWER SUPPLY




1. Separate the electronics base from the mechanism base. (See page 36).
2. Disconnect the DC power harness (1) from the connector CN2 on the power supply (3).
3. Disconnect the power supply switch harness (2) from the connector CN1 power supply.
4. Unscrew the four screws (4) holding the power supply to the electronics base (5).

# AC INLET AND AC SWITCH

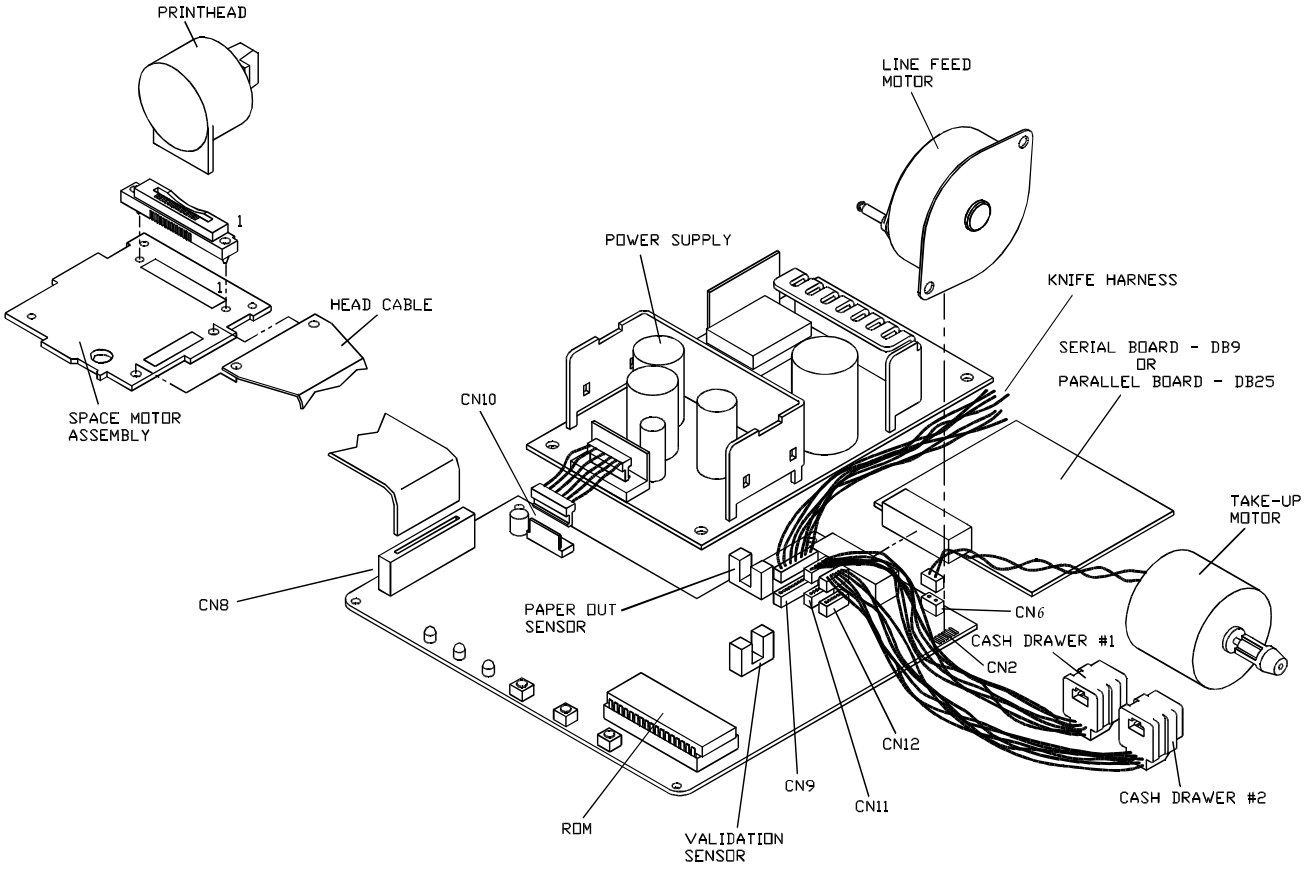



1. Remove the power supply. (See page 54).
2. Unplug the wires from the power switch assembly (1).
3. Remove the power switch assembly (1) by squeezing the tabs on the sides of the switch and pushing it out of the electronics base (2).
4. Unscrew the nut (3) holding the ground wire (4) to the stud (7) on the electronics base (2). Remove the lock washer (5) from the stud.
5. Remove the AC inlet assembly (6) by squeezing the tabs on the top and bottom of the assembly.

# TROUBLESHOOTING

This chapter provides solutions to problems that may occur with the printer. Use the table to determine the problem, then refer to the specific flowchart that describes the corrective action for that problem. The flowcharts are identified by the number referred to in the table.

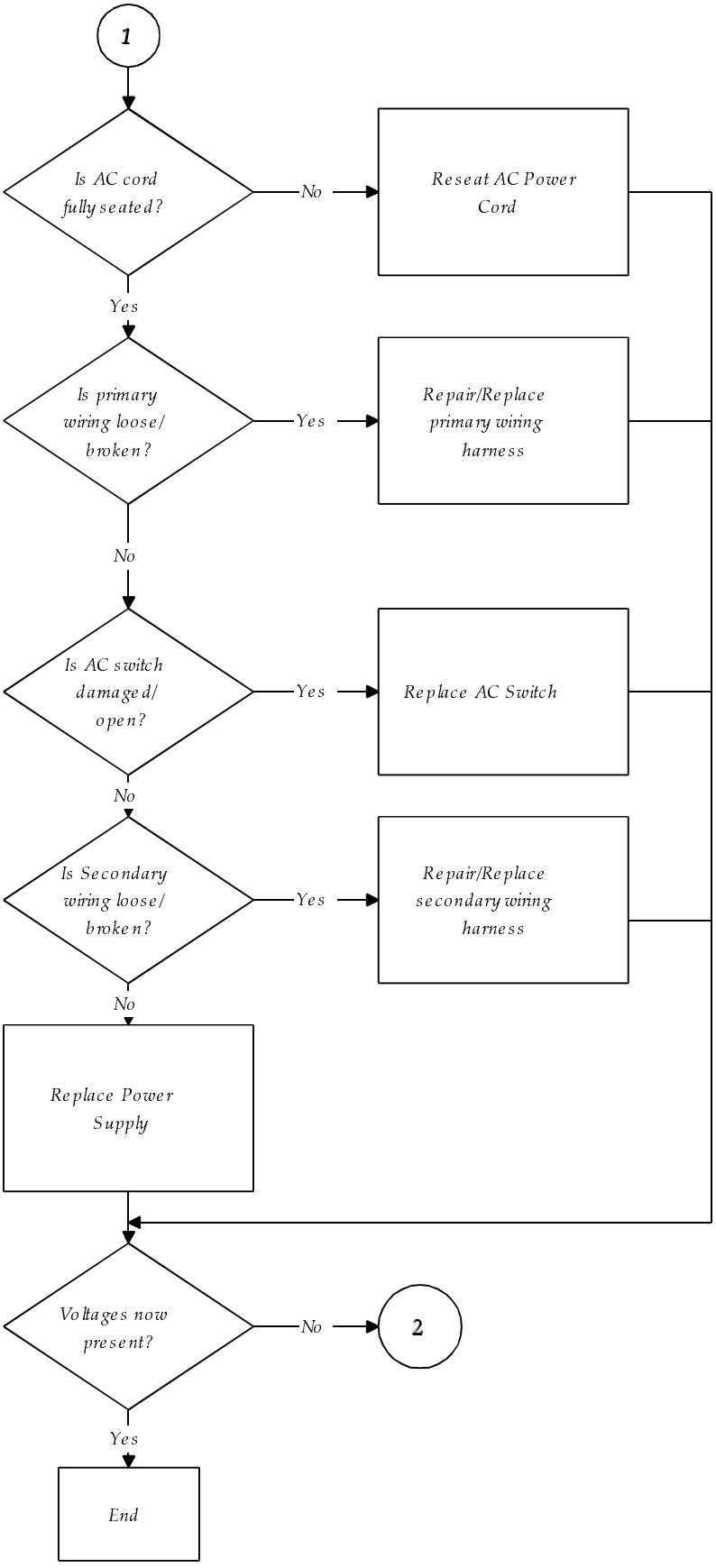
Following the flowcharts is a section that describes checking the connection circuits and resistance for the print head, space motor, and linefeed motor.

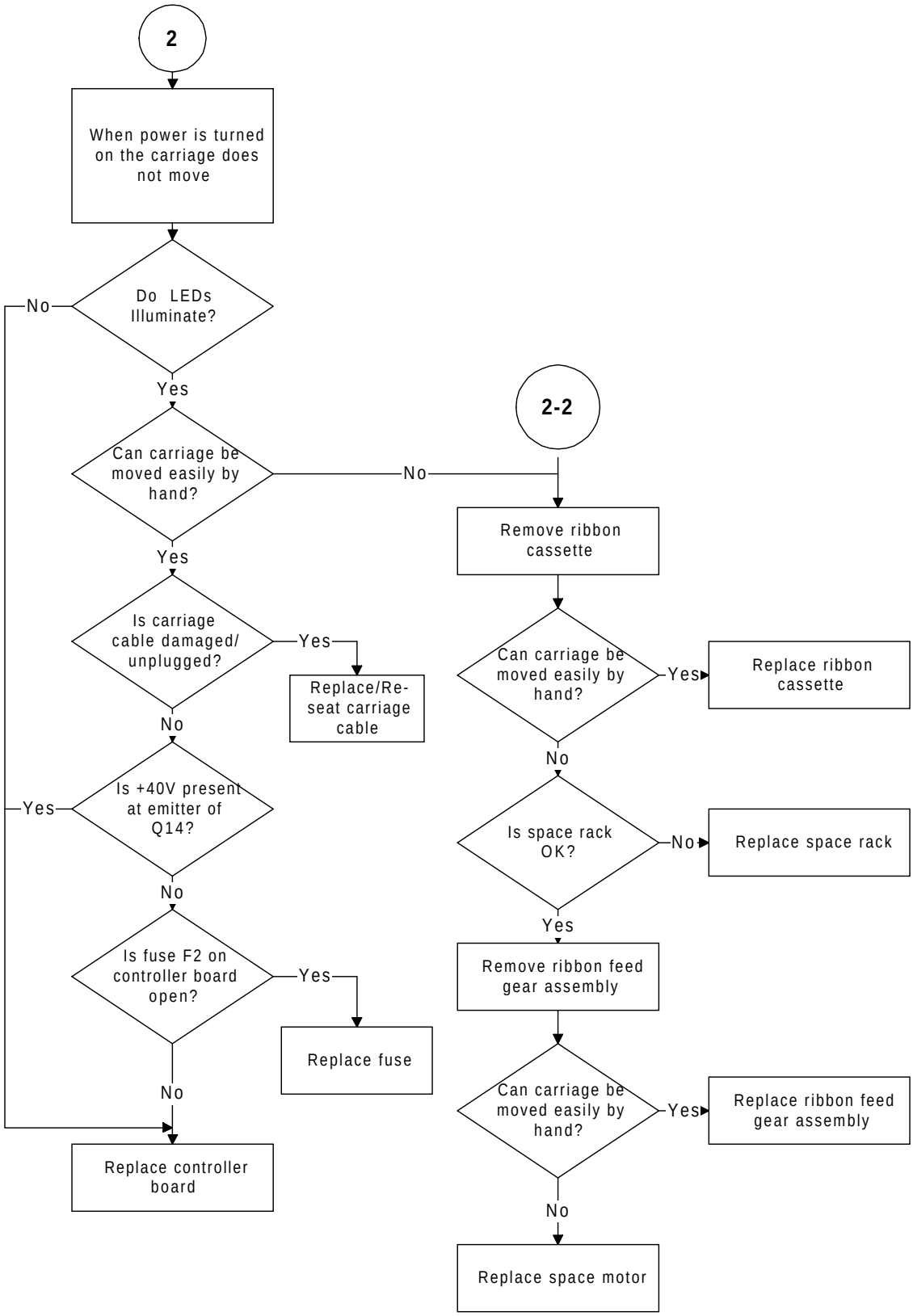


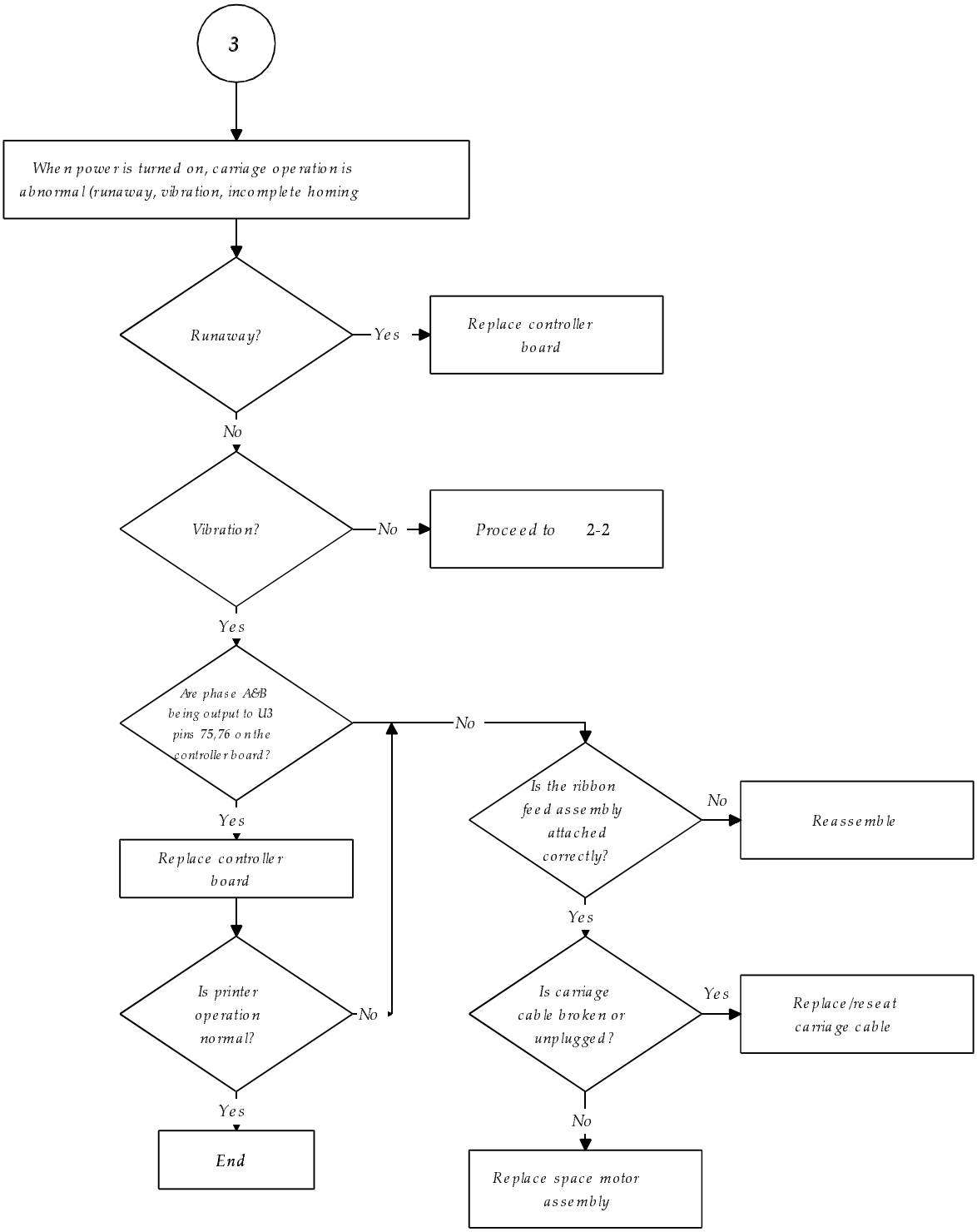

**Note:** This illustration is provided to show the location of electronic components and connectors referred to in the following table and flowcharts and in the ‘Checking Connection and Resistance’ on page 77.

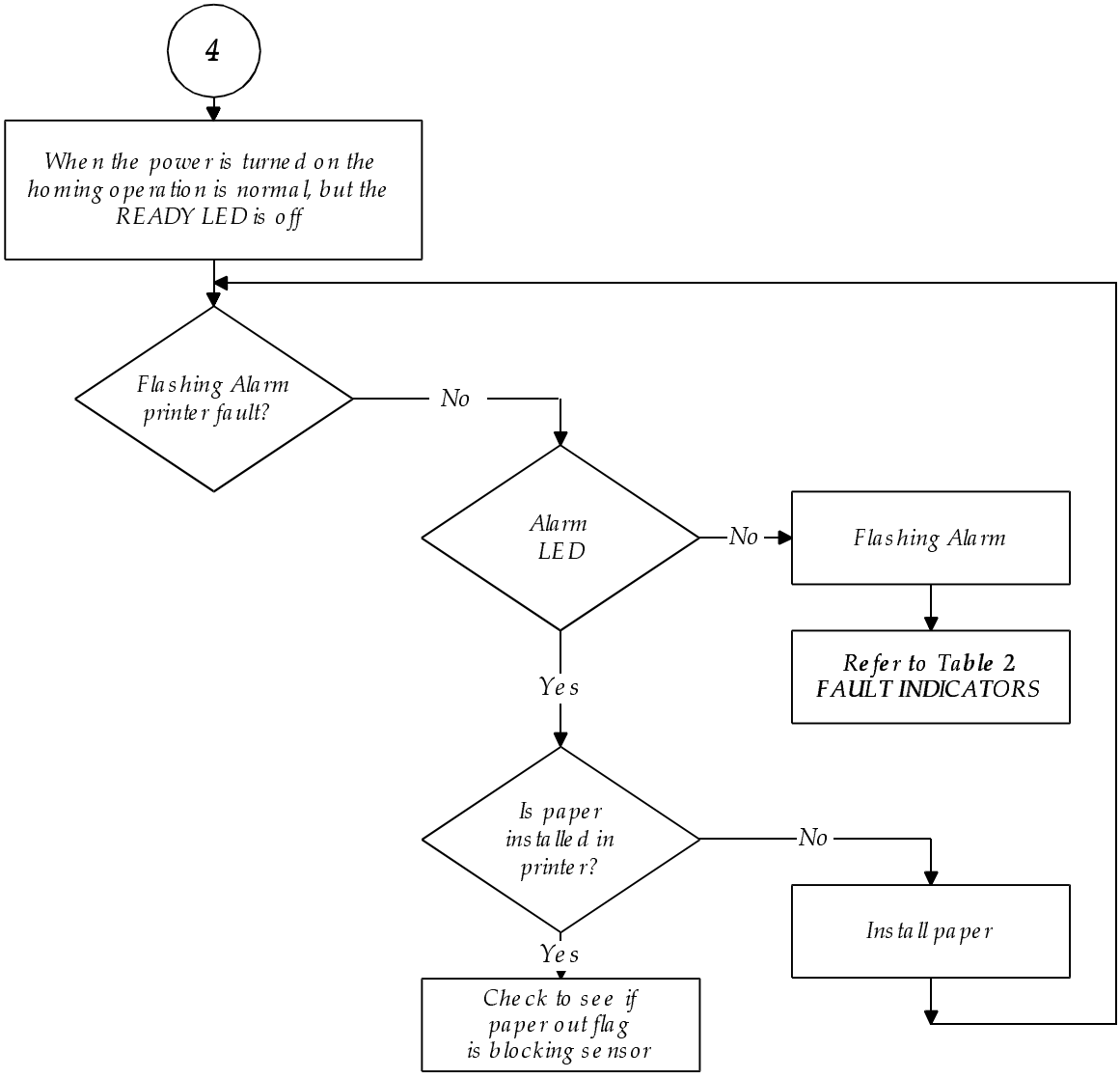
# DETERMINING THE PROBLEM

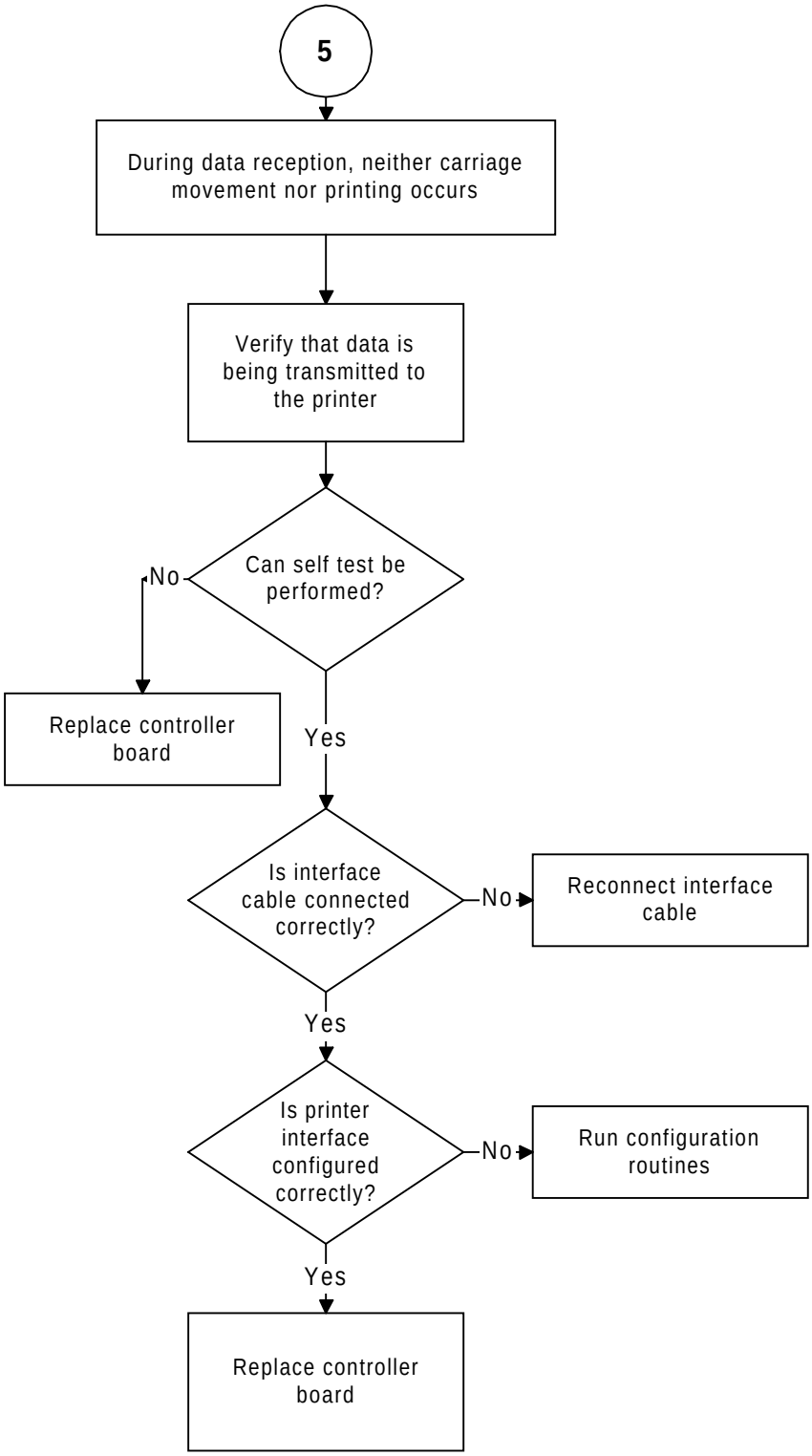
| When Problem Occurs | Description of Problem | Refer to Flowchart |
|---|---|---|
| Trouble at Power On | Switches or lights do not function on the Keypad and the Carriage does not move | 1 |
| | Carriage does not move and power LED is lit | 2 |
| | Carriage does not operate normally: runaway, vibration, incomplete homing | 3 |
| | Carriage homes normally, but Indicator Display does not operate normally | 4 |
| Trouble During Data Reception or Printing | Spacing or printing does not occur | 5 |
| | Spacing operates normally, but printer does not print | 6 |
| | Printer stops printing | 7 |
| | Wrong characters are printed or some characters are not printed | 8 |
| | Some dots do not print | 9 |
| | Print is not dark enough | 10 |
| Forms Handling | Receipt does not line feed | 11 |
| | Validation failure | 12 |

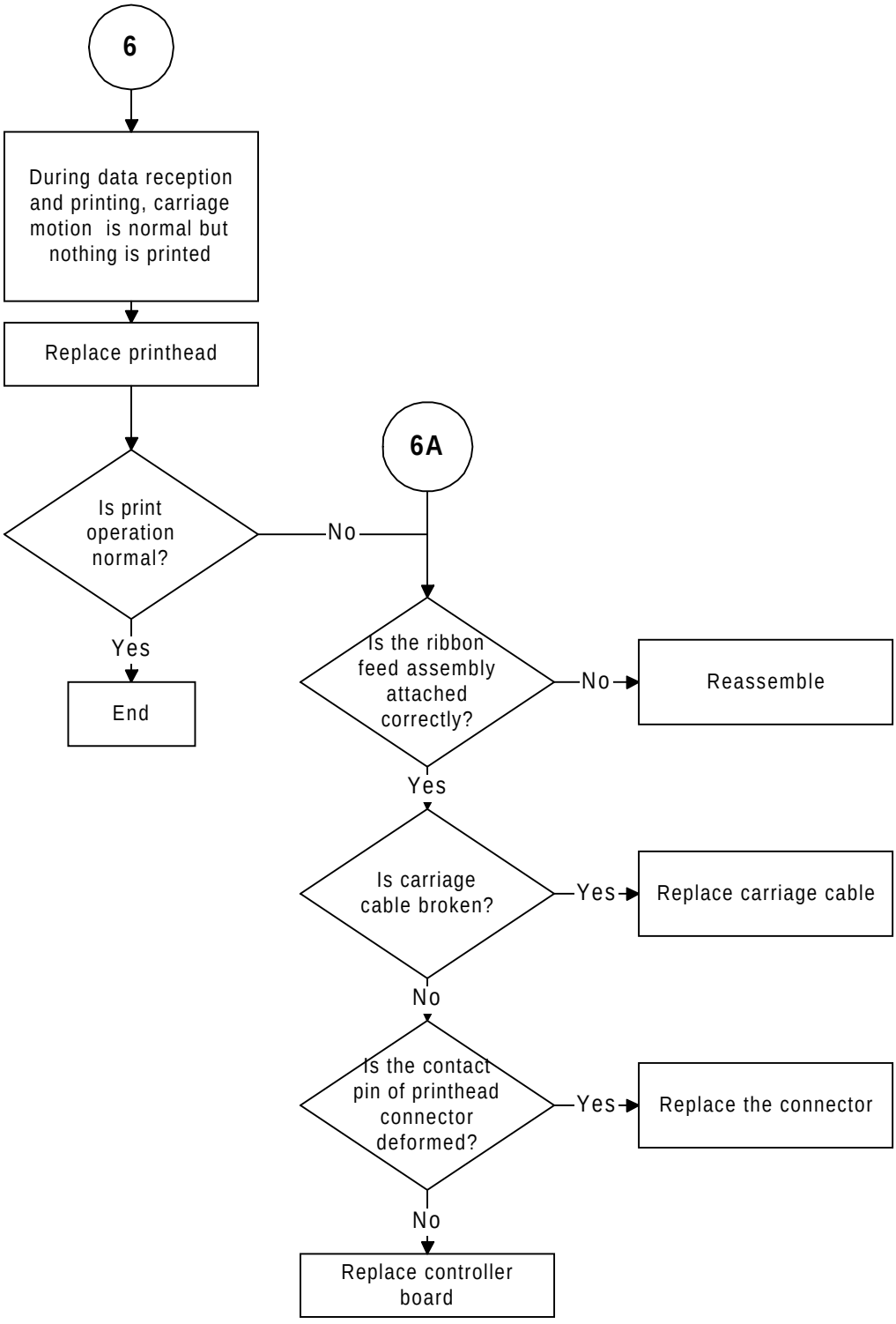

1
Is AC cord fully seated?
No
Reseat AC Power Cord
Yes
Is primary wiring loose/ broken?
Yes
Repair/Replace primary wiring harness
No
Is AC switch damaged/ open?
Yes
Replace AC Switch
No
Is Secondary wiring loose/ broken?
Yes
Repair/Replace secondary wiring harness
No
Replace Power Supply
Voltages now present?
No
2
Yes
End

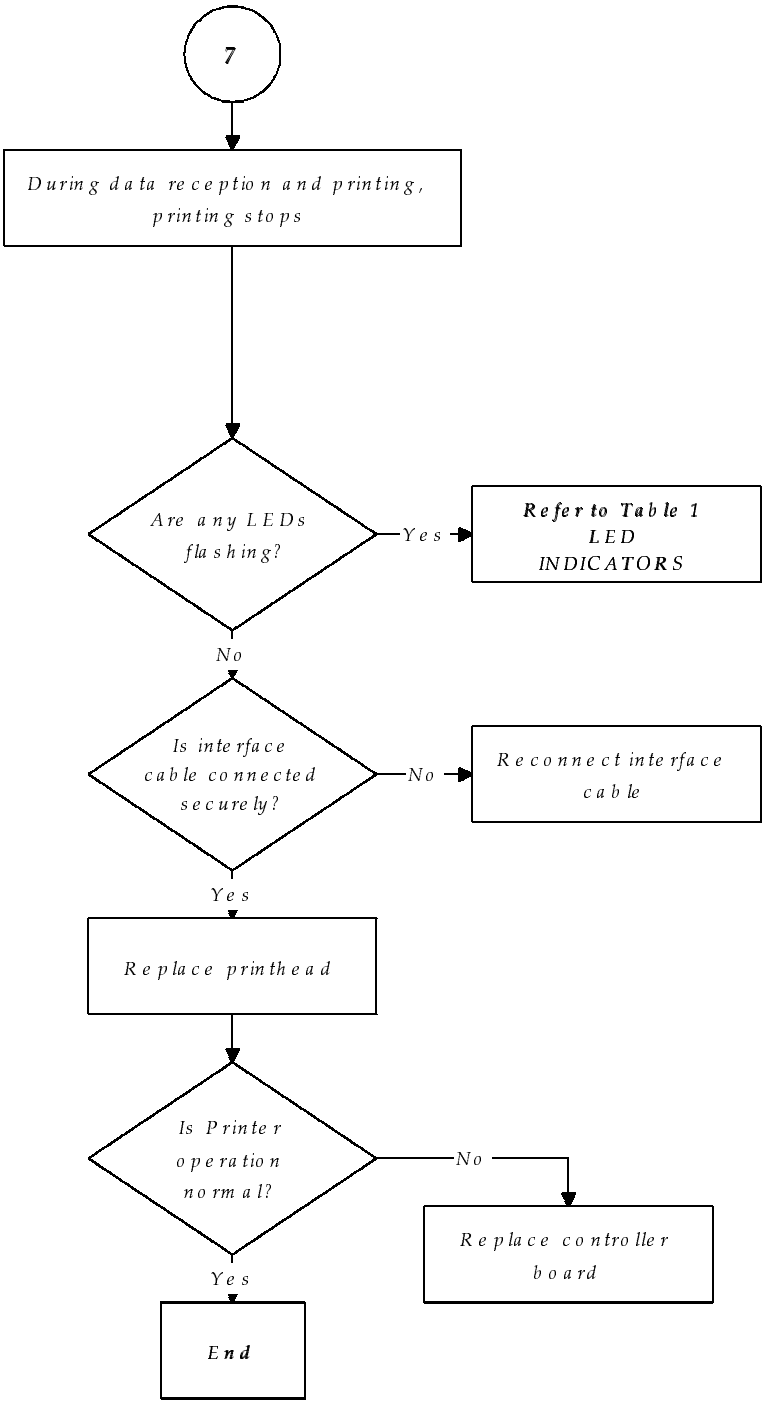

2
When power is turned on the carriage does not move
Do LEDs Illuminate?
No
Yes
Can carriage be moved easily by hand?
No
Yes
2-2
Is carriage cable damaged/ unplugged?
Yes
Replace/Re-seat carriage cable
No
Is +40V present at emitter of Q14?
Yes
No
Is fuse F2 on controller board open?
Yes
Replace fuse
No
Replace controller board
Remove ribbon cassette
Can carriage be moved easily by hand?
Yes
Replace ribbon cassette
No
Is space rack OK?
No
Replace space rack
Yes
Remove ribbon feed gear assembly
Can carriage be moved easily by hand?
Yes
Replace ribbon feed gear assembly
No
Replace space motor

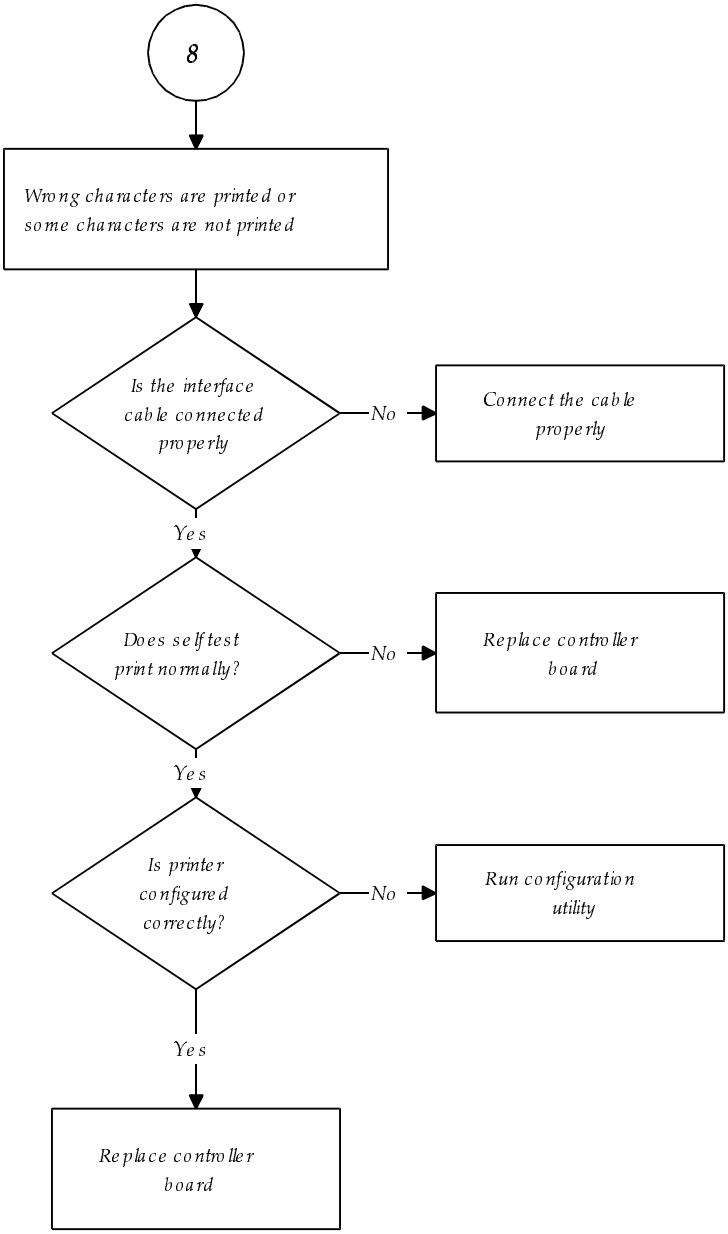

3
When power is turned on, carriage operation is abnormal (runaway, vibration, incomplete homing
Runaway?
Yes
Replace controller board
No
Vibration?
No
Proceed to 2-2
Yes
Are phase A&B being output to U3 pins 75,76 on the controller board?
No
Yes
Replace controller board
Is printer operation normal?
No
Yes
End
Is the ribbon feed assembly attached correctly?
No
Reassemble
Yes
Is carriage cable broken or unplugged?
Yes
Replace/reseat carriage cable
No
Replace space motor assembly

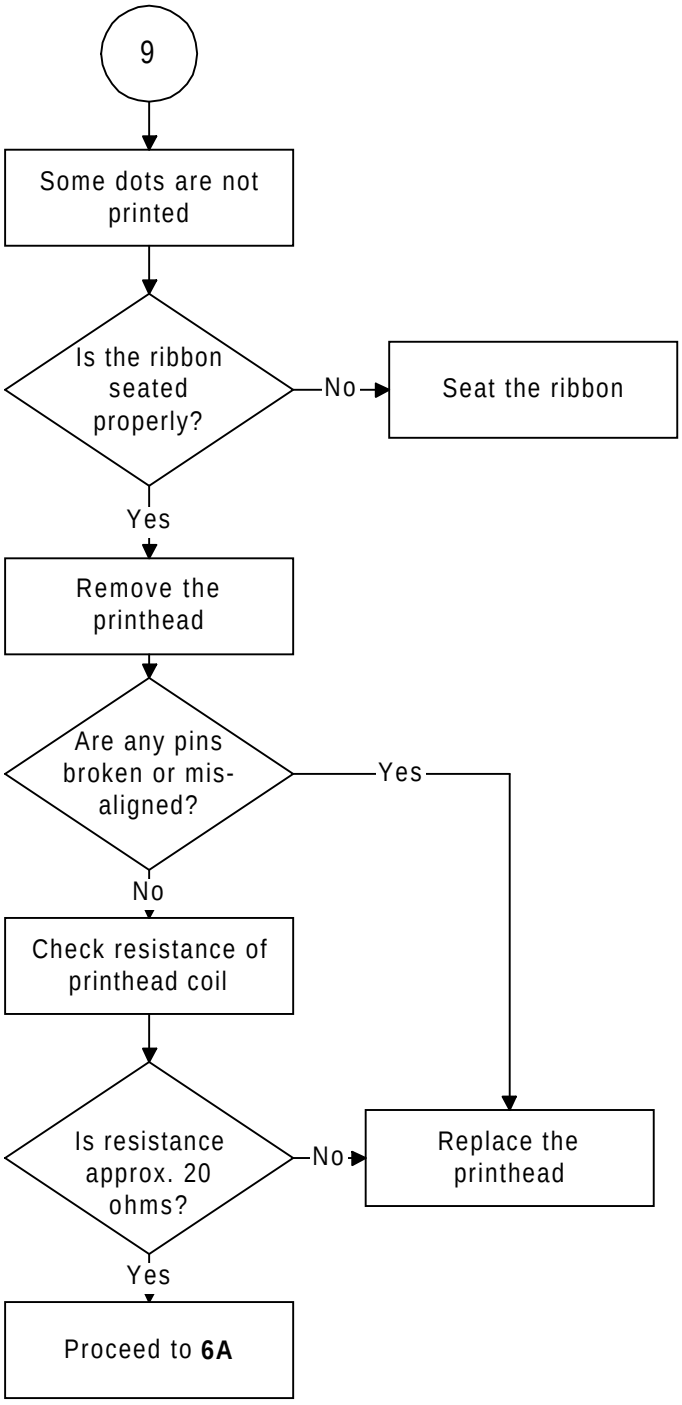

4
When the power is turned on the homing operation is normal, but the READY LED is off
Flashing Alarm printer fault?
No
Alarm LED
No
Flashing Alarm
Refer to Table 2 FAULT INDICATORS
Yes
Is paper installed in printer?
No
Install paper
Yes
Check to see if paper out flag is blocking sensor

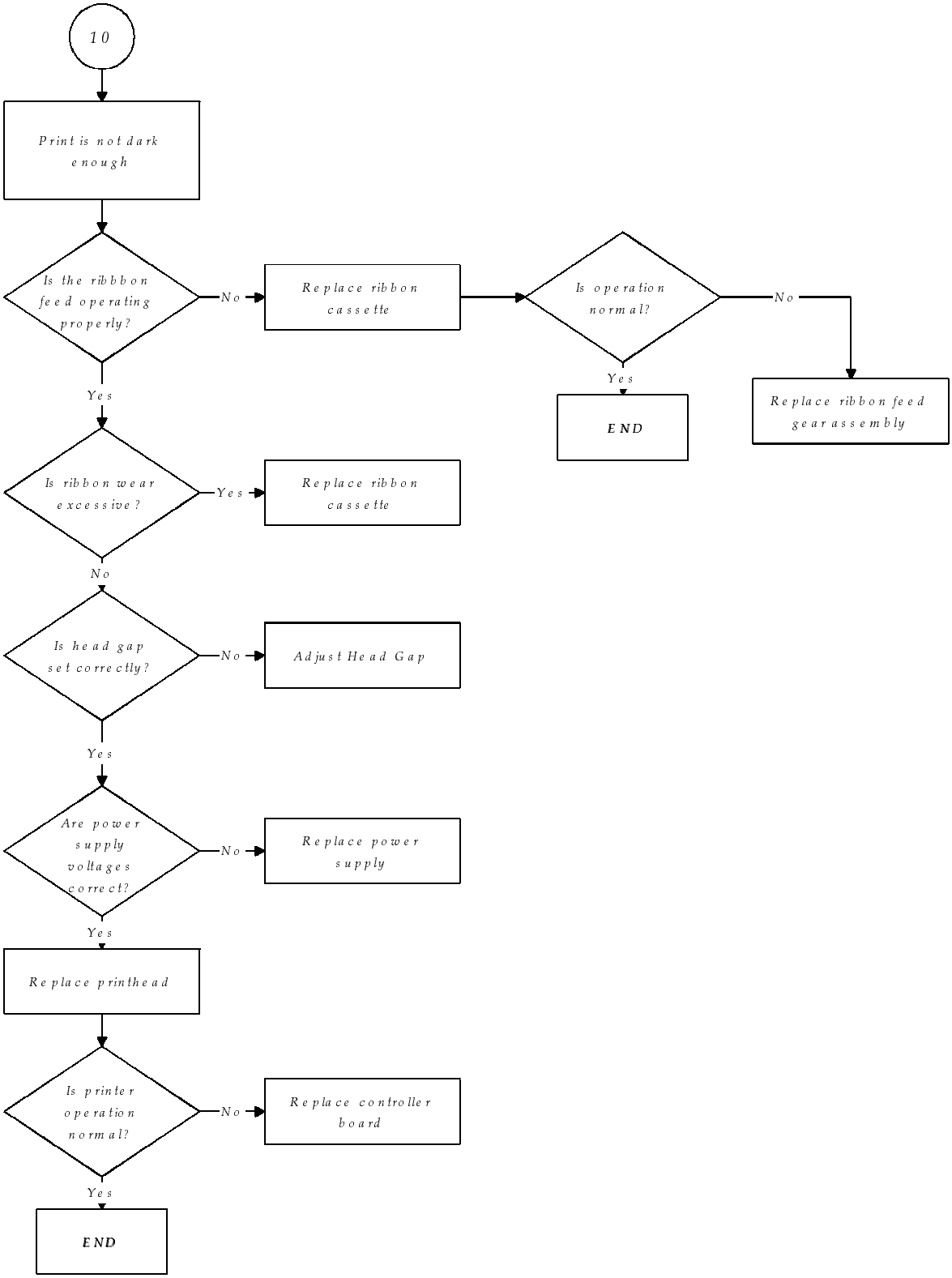

5
During data reception, neither carriage movement nor printing occurs
Verify that data is being transmitted to the printer
Can self test be performed?
No
Replace controller board
Yes
Is interface cable connected correctly?
No
Reconnect interface cable
Yes
Is printer interface configured correctly?
No
Run configuration routines
Yes
Replace controller board

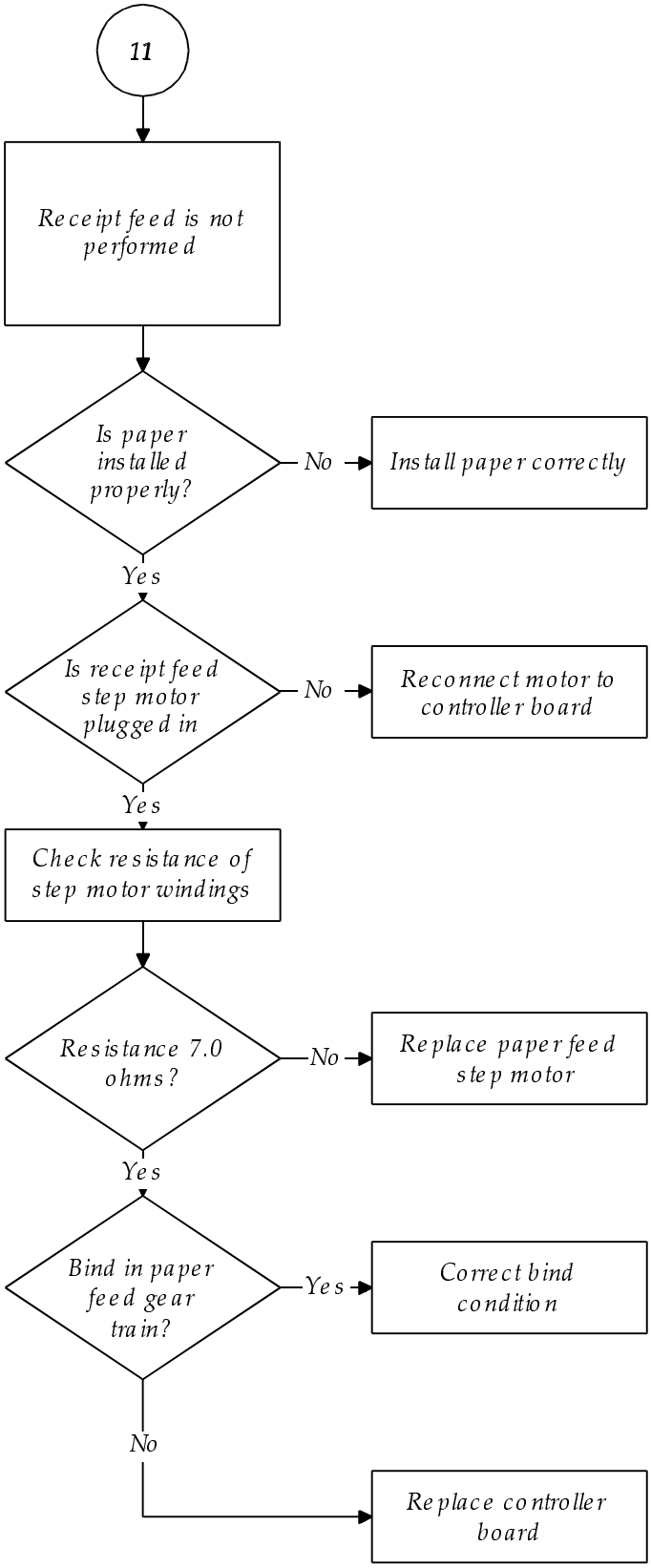

6
During data reception and printing, carriage motion is normal but nothing is printed
Replace printhead
Is print operation normal?
No
Yes
End
6A
Is the ribbon feed assembly attached correctly?
No
Reassemble
Yes
Is carriage cable broken?
Yes
Replace carriage cable
No
Is the contact pin of printhead connector deformed?
Yes
Replace the connector
No
Replace controller board

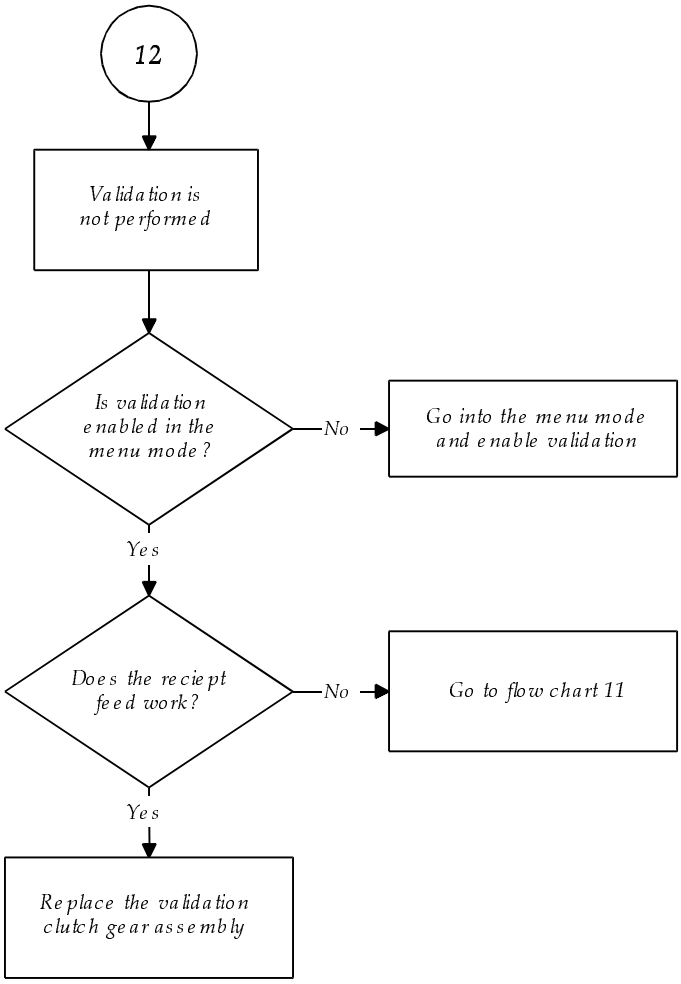

7
During data reception and printing, printing stops
Are any LEDs flashing?
Yes
Refer to Table 1 LED INDICATORS
No
Is interface cable connected securely?
No
Reconnect interface cable
Yes
Replace printhead
Is Printer operation normal?
No
Replace controller board
Yes
End


8
Wrong characters are printed or some characters are not printed
Is the interface cable connected properly
No
Connect the cable properly
Yes
Does self test print normally?
No
Replace controller board
Yes
Is printer configured correctly?
No
Run configuration utility
Yes
Replace controller board

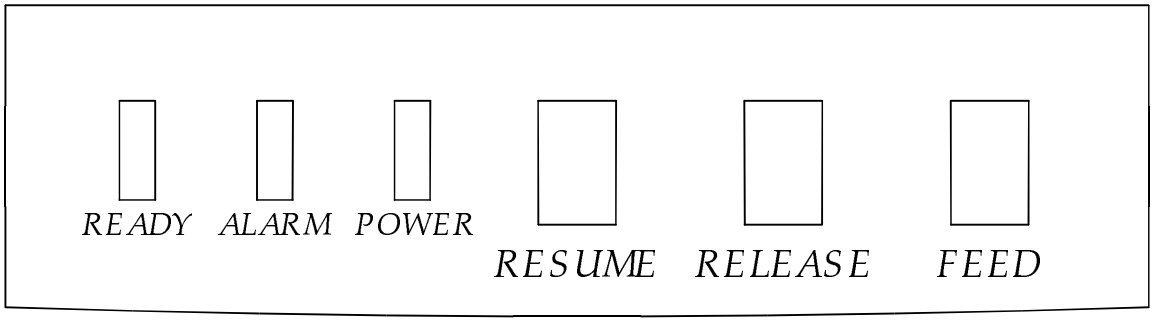

9
Some dots are not printed
Is the ribbon seated properly?
No
Seat the ribbon
Yes
Remove the printhead
Are any pins broken or mis-aligned?
Yes
No
Check resistance of printhead coil
Is resistance approx. 20 ohms?
No
Replace the printhead
Yes
Proceed to 6A


10
Print is not dark enough
Is the ribbon feed operating properly?
No
Replace ribbon cassette
Is operation normal?
No
Replace ribbon feed gear assembly
Yes
END
Yes
Is ribbon wear excessive?
Yes
Replace ribbon cassette
No
Is head gap set correctly?
No
Adjust Head Gap
Yes
Are power supply voltages correct?
No
Replace power supply
Yes
Replace printhead
Is printer operation normal?
No
Replace controller board
Yes
END


11
Receipt feed is not performed
Is paper installed properly?
No
Install paper correctly
Yes
Is receipt feed step motor plugged in
No
Reconnect motor to controller board
Yes
Check resistance of step motor windings
Resistance 7.0 ohms?
No
Replace paper feed step motor
Yes
Bind in paper feed gear train?
Yes
Correct bind condition
No
Replace controller board


12
Validation is not performed
Is validation enabled in the menu mode?
No
Go into the menu mode and enable validation
Yes
Does the reciept feed work?
No
Go to flow chart 11
Yes
Replace the validation clutch gear assembly

# OPERATING THE KEYPAD




The keypad contains three buttons and three indicator lights for easy operation of the printer. The AC power switch is on the left rear side of the printer. Take a few minutes to become familiar with the keypad so that if something unexpected happens, you'll be prepared.

## BUTTONS

The printer includes three buttons and a power switch, which have the following functions:

***FEED Button***

The FEED button advances receipt/journal paper.

***RELEASE Button***

The RELEASE button is used on printers with validation capability. This button opens and closes the Forms Compensation Assembly, allowing forms to be removed if a jam occurs.

***RESUME Button***

The RESUME button has two functions.

1. Places the printer ON-LINE after a paper loading operation has been completed.
2. After a printer fault has occurred, the alarm LED will display the error code after the RESUME button is depressed. (Refer to the *Programming Guide* for details.)

**Note:** When the printer is reinitialized, all printer functions return to their default settings (as if the printer were just turned on) and any data stored in the print buffer is lost. In this case, you may need to re-enter the current transaction.

## AC POWER SWITCH

The AC power switch turns the printer on and puts it on-line (READY light ON, ALARM light OFF, POWER light ON).

**Note:** The printer takes about 1.5 seconds to begin operation.

# INDICATOR LIGHTS

There are three indicator lights: READY, ALARM, and POWER. The READY and POWER lights are green. The ALARM light is red.

The printer can be in any of the following states:

| **STATE** | **READY** Green Indicator | **ALARM** Red Indicator | **POWER** Green Indicator |
|---|---|---|---|
| 1. Ready<br>The printer is ready to receive data and print | ON | OFF | ON |
| 2. Printer Not Ready<br>Off-line | OFF | OFF | ON |
| 3. Ready but waiting for a form | ON | Flash | ON |
| 4. Out of Paper | OFF | ON | ON |
| 5. Menu Mode | Flash | OFF | Flash |
| 6. Test Mode | Flash | OFF | ON |
| 7. Printer Fault | OFF | Flash | ON |
| 8. Printer Failure | OFF | OFF | OFF |
| 9. Watch Dog Fault (Printer Resets) | | | |

**Table 1 LED Indicators**

# PRINTER FAULT INDICATORS

If the printer indicates Printer Fault, the error is not recoverable. The printer must be restarted and may lose information. To aid in printer trouble shooting, the “RESUME” key will activate an extended diagnostic indication. This will blink the status indicator a number of times. The number of blinks indicates the fault.

These errors are as follows:

| | | |
|---|---|---|
| **Faults while in operation:** | | |
| | 1 | Motor move time-out |
| | 2 | Motor move retry fault |
| | 3 | Motor move fault (Moved in wrong direction) |
| | 4 | Space motor locked |
| | 5 | Motor homing fault |
| | 6 | Motor acceleration fault |
| | 7 | Printing fault |
| | 8 | Fault while centering |
| | 9 | Forms compensation fault |
| **Faults during level 0 diagnostic:** | | |
| | 10 | ROM check-sum failure |
| | 11 | RAM failure |
| | 12 | Configuration EEPROM failure |
| | 13 | Processor test fault |
| | 14 | EEPROM Check-sum failure |
| **Faults that can happen any time:** | | |
| | 15 | Firmware control fault (Loss of program control) |
| | 16 | Cutter Option Fault |

**Table 2 Fault Indicators**

After the fault code is displayed, the printer can be restarted by pressing the RESUME and RELEASE buttons at the same time.

If the EEPROM Check-sum fault occurs (Fault Code 14), the EEROM can be set to defaults by pressing the RESUME and LF buttons at the same time. The printer will now be functional but must be reconfigured. This procedure is only to allow reconfiguration and not to recover printer function in the field.

If the indication is “Printer Failure”, the printer controller is not running and is being held in reset. If this failure occurs, the printer is not functional and should be serviced.

If the printer appears to go through a power cycle by itself, the hardware watchdog has detected a fault. This fault is generally a hardware failure or an external interference. If the fault is hardware, the printer will continue to cycle through its diagnostics and then reset. If this happens, the printer must be serviced. If the fault is caused by external interference like electrostatic discharge, the printer will generally recover by itself. (NOTE: The parallel port INIT pin causes a soft reset.)

# PRODUCT SELF TESTS

The 150 Printer features several levels of self test. At power up the printer always runs Level 0 Diagnostics. The Level 0 Diagnostics check the printer for proper operation. After the Level 0 Diagnostics is complete, the printer checks the keypad for a request to enter one of the Extended Diagnostics Test, if a request is not found the printer enters normal operations.

## LEVEL 0 DIAGNOSTICS

Level 0 Diagnostics always run at power up. It performs the follow tests.

| **TEST** | **READY** Green Indicator | **ALARM** Red Indicator | **POWER** Green Indicator |
|---|---|---|---|
| 1. Reset | ON | ON | ON |
| 2. CPU Test and ROM Test | OFF | OFF | ON |
| 3. External RAM Test | ON | OFF | ON |

## EXTENDED DIAGNOSTICS

The Extended Diagnostic allows the printer to enter one of several modes.

- Self Test

  Allows testing of various modes of the printer.

- Configuration Mode

  Enables manual configuration of the printer.

- Hex Dump

  Prints the hex value sent to the printer from the host.

- Remote Configuration Mode

  Allows remote configuration of the printer by a PC running the CFG150 program.

***Self Test***

The Self Test offers six tests listed below.

- Receipt Test

This test prints a sample receipt.

- Validation Test

  This test performs a sample validation.

- Self test

  This tests a number of the printer's print capabilities.

- Mechanical Test Mode

  This tests the forms compensation mechanism.

- Rolling ASCII Test

  This test prints a continuous printout and is useful for testing the printer reliability and ribbon life.

- Burn-in Test

  This test is part of the production process. It checks that the printer is functioning correctly and provides an initial burn in.

To start the Self Test, follow the steps listed below.

1. Turn the printer off.
2. Press and hold the RESUME button while turning the printer on.

   When the printer starts printing, release the RESUME button.

   The software revision information and instructions are printed. When the printer stops printing, the first selectable test is printed at the bottom of the receipt.
3. Press and release the RELEASE button until the test you would like to run is printed.
4. Press the RESUME button at the start of the test.
5. To exit the Self Test, turn the printer off and then back on.

### *Configuration Mode*

This mode allows manual configuration of the printer. The printer requires proper configuration to run correctly with the host PC or after the Level 0 Diagnostic detects an invalid EEPROM. When an invalid EEPROM is detected, the EEPROM is initialized; a default configuration is loaded; and the printer needs to be reconfigured to run correctly with the host PC.

**Note:** Manual configuration may be locked by remote configuration. In this case, enter the Remote Configuration Mode. (See page 76).

For a compete list of Configuration Options and recommended settings, refer to the *OKIPOS 150 Series Programmer's Guide.*

To start the Configuration Mode, follow the steps listed below.

1. Turn the printer off.
2. Press and hold the FEED and RESUME buttons while turning the printer on.

   When the printer starts printing, release both buttons.

   The software revision information and instructions are printed. When the printer stops printing, the first selectable test is printed at the bottom of the receipt.
3. Press and release the RESUME button until the group you would like to change is printed.
4. Press and release the RELEASE button until the correct option is printed.
5. Press the RELEASE and RESUME buttons to select the option.
6. Repeat steps 3 and 5 until all the correct options are selected.
7. Verify the current configuration by pressing and releasing the RESUME and FEED buttons. This will print a list of all the current settings.
8. To save the configuration, repeat step 3 until 'Save Configuration' is printed.

   Press and release the RELEASE button until 'Yes' is printed.

   Press and release the RELEASE and RESUME buttons to select 'Yes'.

   The current configuration is saved, and the printer is ready for normal operations.

***Hex Dump Mode***

This mode is used to diagnose communication problems with the printer. As the printer receives information, the information is converted to HEX/ ASCII code and printed on the receipt. Refer the *OKIPOS 150 Series Programmer's Guide* for more information about the Hex Dump format.

To start the Hex Dump Mode, follow the steps listed below.

1. Turn the printer off.
2. Press and hold the RESUME and RELEASE buttons while turning the printer on.

   When the printer starts printing, release both buttons.
3. To exit the Hex Dump Mode, turn the printer off and then back on.

### *Remote Configuration Mode*

This mode allows a remote host PC to setup, display configuration information, and test the 150 Series Printer and requires the CFG150 Program be running on a PC connected the printer. Refer to the *OKIPOS 150 Series Programmer's Guide* for detailed information about the CFG150 Program.

To run the Remote Configuration Mode, follow the steps listed below.

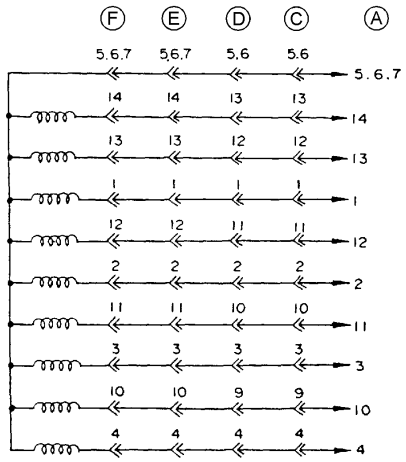
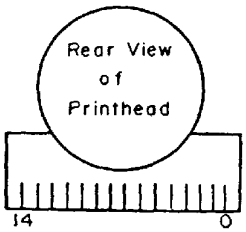
1. Connect the printer to a host PC using either the serial or parallel port.
2. Load the configuration program into the PC, and enter configuration mode.
3. Turn the printer off.
4. Press and hold the FEED and RELEASE buttons while turning the printer on.

   After the Level 0 Diagnostics the printer will enter CFG150 Mode.
5. To exit the Remote Configuration Mode, turn the printer off and then back on.

# CHECKING CONNECTIONS AND RESISTANCE

## PRINT HEAD

The following illustration shows the connection circuit for the print head and the rear of the print head. The resistance should be approximately 20 ohms.

| Pins at Connection | Signals | Pins on Print head | Rear of Print head |
|---|---|---|---|
|  | Common | 5, 6, 7 |  |
| | Wire #1 | 14 | |
| | Wire #2 | 13 | |
| | Wire #3 | 1 | |
| | Wire #4 | 12 | |
| | Wire #5 | 2 | |
| | Wire #6 | 11 | |
| | Wire #7 | 1 | |
| | Wire #8 | 10 | |
| | Wire #9 | 4 | |

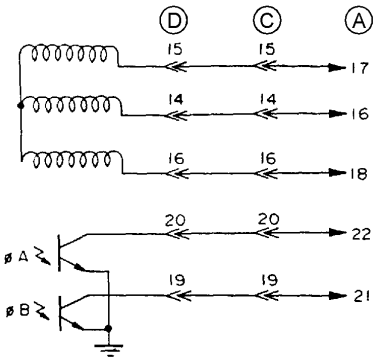
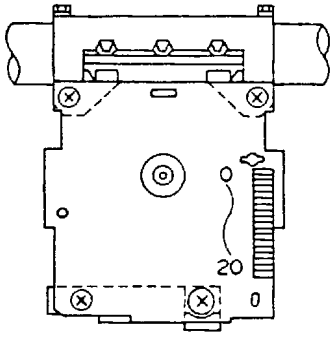


The following example shows how to measure the resistance.

Use 5, 6, 7 on printhead and measure with a meter to pin 14 at location A. The resistance should read 20 ohms. This procedure checks the circuit of wire number one of the printhead.

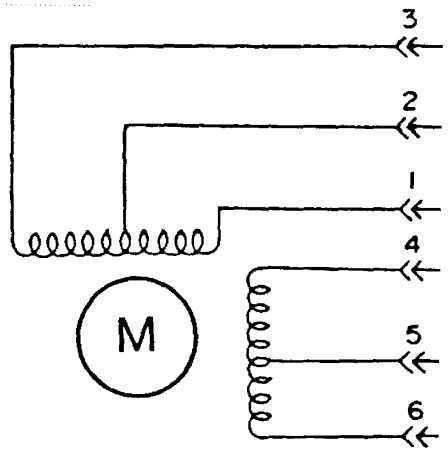
# SPACE MOTOR ASSEMBLY

The following illustration shows the connection circuit for the space motor assembly and the pins on the space motor. The resistance should be approximately 21 ohms between pads 17 and 16, 16 and 18, and 17 and 18 on the space motor.

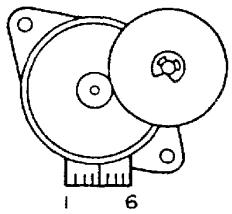
| Pins at Connection | Signals | Pins on Space Motor | |
|---|---|---|---|
|  | V | 15 |  |
| | U | 14 | |
| | W | 16 | |
| | A | | |
| | B | | |

## LINEFEED MOTOR

The following illustration shows the connection circuit for the linefeed motor. The resistance of each coil should be approximately 70 ohms between pins 3 and 2, 2 and 1, 4 and 5, and 5 and 6 on the linefeed motor.

| Pins at Connection | Signals | Pins on Linefeed Motor |
|---|---|---|
|  | Phase One | 3 |
| | Common | 2 |
| | Phase Three | 1 |
| | Phase Two | 4 |
| | Common | 5 |
| | Phase Four | 6 |

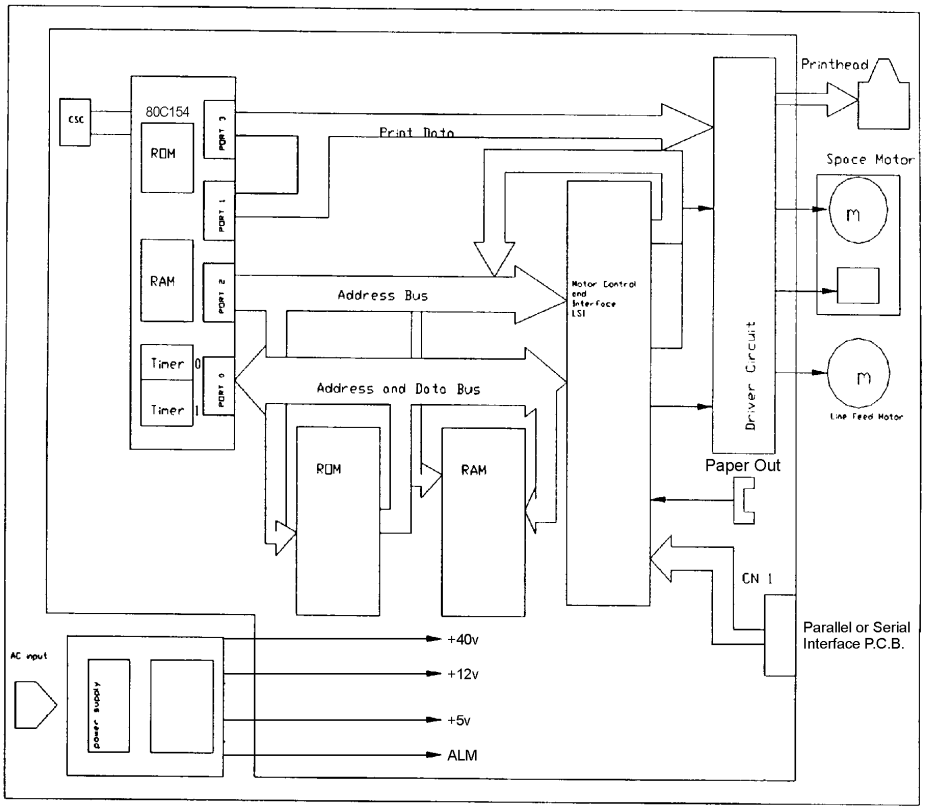




# APPENDIX A: THEORY OF OPERATION

# ELECTRICAL OPERATION

## CIRCUIT OPERATION




The electrical section of the printer consists of the components shown in the above diagram.

The control board contains the microprocessor, its peripheral circuits, and all associated drive circuits for the print head, line feed motor, journal take-up motor, cash drawers, and sensors.

The printer control signals from the host system (PC or terminal) are brought directly to the control board from the rear panel on the printer.

# MICROPROCESSOR AND PERIPHERAL CIRCUITS

## MICROPROCESSOR (U1: 80C154)

The microprocessor is the nucleus of the control board. It controls the peripheral circuits.

## PROGRAM ROM (U4)

The program ROM stores the control program for the printer.

## PROGRAM RAM (U2)

The RAM stores printer configuration information.

## RAM (U5)

The RAM stores data such as received print data.

## LSI (M7U042-026)

The M7U042-026 motor control LSI has the following functions:

- Space Motor Speed Control Function
- Dot Timing Generation Function
- I/O Ports
- Address Latch
- Address Decoder

***Space Motor Speed Control Function***

This function accelerates and decelerates the space motor in accordance with commands from the microprocessor and controls the space motor speed in each printing mode.

***Dot Timing Generation Function***

This function generates the dot timing signal (/IPT), synchronized with the printing speed in accordance with output signals (PHASE A, B) of the encoder on the space motor, and sends this timing information to the microprocessor.

***I/O Ports***

The input and output ports control signals in accordance with the commands input from the microprocessor.

### *Address Latch*

The address latch fastens the low-order 8-bits of the address (A0 to A7). These bits are used as an address for read/write operations with peripheral devices.

### *Address Decoder*

The address decoder decodes the address signal (A11 to A15) and sends the /RAMSEL4 signal.

## INITIALIZATION

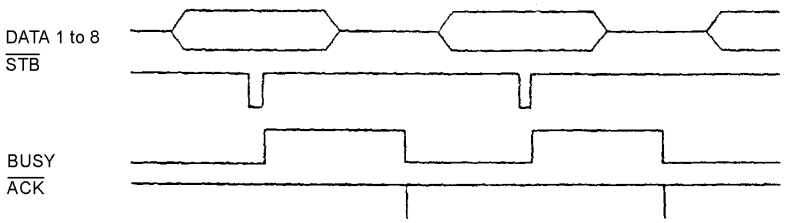
The printer is initialized when the power is turned on or when the parallel interface signal, I-PRIME, is received from the host computer.

Initialization is started with the RSTOUT signal output from the reset circuit to reset U1 (micro-processor) and U3 (LSI).

When resetting is complete, the program starts with mode setting of U1, U3, and U5, memory (ROM and RAM) check, AM initialization, and then carriage homing. The program finally establishes the interface signals (output of ACK signal, BUSY signal, etc.), lights the select indicator, and informs the host system that the printer is ready for data reception (in the data reception wait state). This completes the initialization routine.

# INTERFACE CONTROL

## PARALLEL INTERFACE



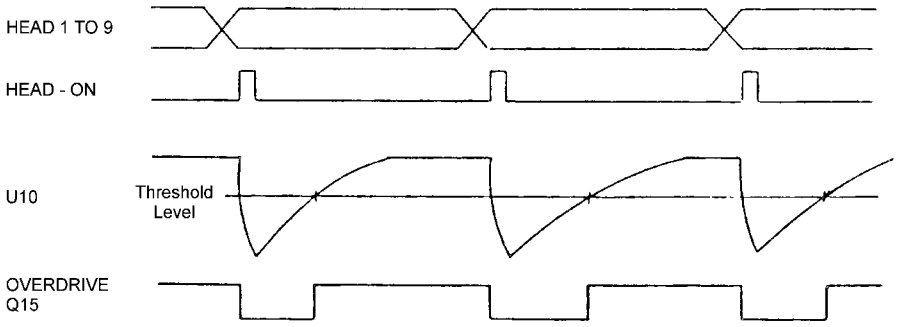

The data from the interface is input through the connector (CN6), and the interface LSI (U3: 7U042-026) latches this input data in sync with the /STB signal.

The BUSY signal is on during processing of this data. When the processing is complete, the BUSY signal is turned off, and an /ACK signal is sent to request more data.

## SERIAL INTERFACE

This data from the interface is input through the connector (CN7) and the serial drive (U6: DS14C238) with data I/O to the microprocessor.

# PRINT HEAD DRIVE CIRCUIT

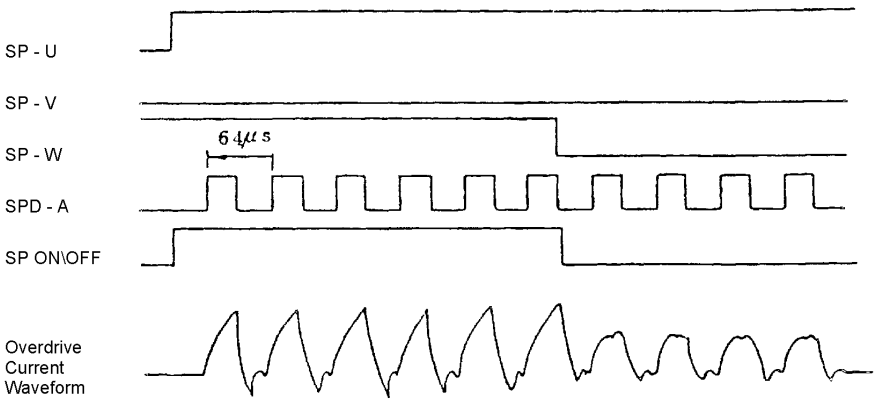



This circuit drives the head magnets corresponding to the HEAD DATA 1 to 9 signals in accordance with the HEAD-ON signal. This makes the print head print characters.

When the HEAD-ON signal goes high, the RC integrator (R576, and C524) determines the head drive time. The integrator lengthens the drive time if the drive voltage (+40) lowers, and shortens the drive time if the voltage rises. This maintains consistent print wire impact force.

# CARRIAGE DRIVE

## SPACE MOTOR CONTROL




The motor control LSI (U3: M74042-026) outputs the space motor phase signals (SP-U, SP-V, SP-W) in accordance with the spacing command

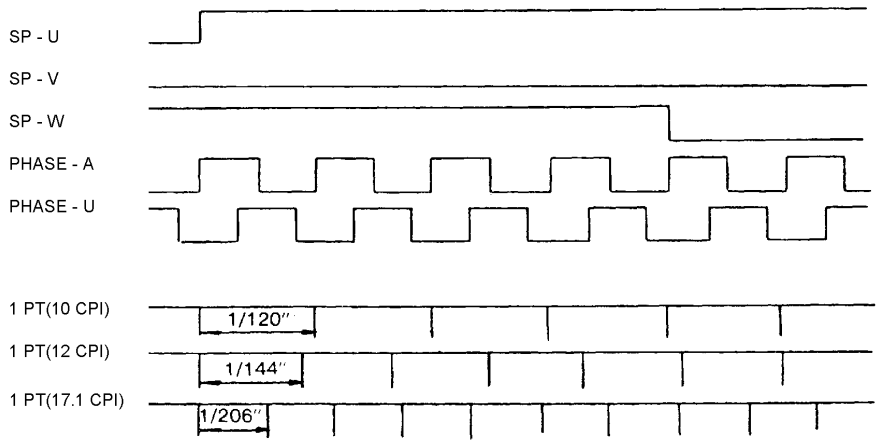
from the microprocessor, and at the same time outputs the overdrive signal (SPD-A).

The SPD-A signal is a fixed-period pulse signal whose pulse width is controllable by the program, and is used to control the motor drive time.

The SP ON/OFF signal is output during acceleration and deceleration when greater torque is required.

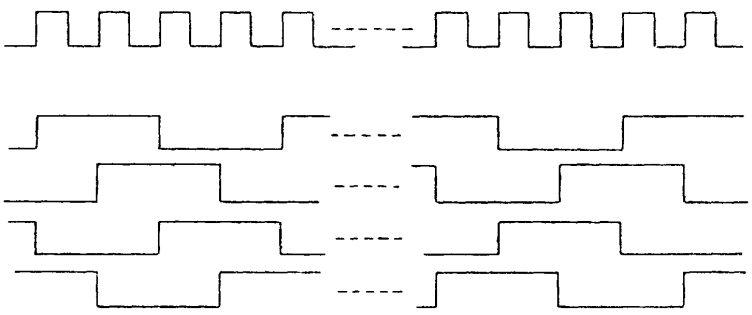
The motor driver (MTDV) drives the space motor in accordance with these signals. Pins 9 and 11 of the MTDV are for the overvoltage (9) and overcurrent (11) protective circuits.

## SLIT ENCODER




Space motor PHASE-A and PHASE-B signals are generated by a photo-sensor and a slit disk. The control LSI (U3: M7U042-026) frequency divides these edge pulse signals at a rate dependent upon the print pitch and outputs the /IPT signal to provide dot-on and carriage position timing.

# LINEFEED



The linefeed motor is locked with the +5 voltage while it is stopped. When line feeding, the linefeed motor is driven by the +40 supply in accordance with the LF OVD signal.

# ALARM CIRCUITS

## DRIVE CIRCUIT FAULT ALARM CIRCUIT

This is a protective circuit that makes the power supply shutdown when a fault occurs in the print head drive circuit, space motor drive circuit, linefeed motor drive circuit, or their peripheral circuits.

The circuit operates by monitoring the drive time using the HDALM, SPALM, and LFALM signals interlocked with the overdrive signal of each drive circuit. If the drive time of any circuit exceeds the specified time, the drive circuit fault alarm outputs an ALM signal to the power supply.

In the event that there is a component failure in the drive circuits, a fuse is located on the controller board to prevent further damage.

Fuse (F2) will blow if their is a component failure in the space motor drive circuit.

## HEAD OVERHEAT ALARM CIRCUIT

In order to protect the head coils, this circuit monitors the head temperature using the built-in thermistor of the print head.

If heavy-duty printing is performed continuously for a long time, the print head temperature rises. When the print head temperature reaches approximately 100°C, a head overheat alarm occurs. At this point, the print mode is switched from bidirectional to unidirectional to reduce the duty-cycle which in turn lowers the temperature of the print head. When the

print head temperature returns below the alarm detection temperature, bidirectional printing is resumed.

When the temperature of the print head rises during operation, the resistance of the thermistor lowers, and the potential of the comparator's (U10) negative input lowers to invert the comparator's output, causing the HEAD TEMP signal to be output to the control LSI.

The printer will slow down printing until the temperature falls back below the threshold.

**Note:** This is a normal operation and will not cause any data loss. Do not turn the printer off, or data loss will result.

## POWER SUPPLY

The power supply is a self-contained integrated switching power supply. The internal fuse (F1) located on the power supply will blow if the supply has an internal fault.

The power supply has the following outputs, +5 VDC, +12 VDC, and +40 VDC, and an alarm signal input.

## AC INPUT

The AC input connector and power switch are located on the back of the printer.

# MECHANICAL OPERATION

## PRINT HEAD MECHANISM AND OPERATION

The print head is spring-loaded, using a permanent magnet, and can be easily removed or installed. The print head is mounted on a carriage that runs parallel to the platen and is connected with the control circuit via the circuit board.

The print head consists of the following items:

- Wire Guide
- Wires
- Armature Assembly
- Yoke
- Springs
- Spacer
- Magnet Assembly
- Thermistor
- PC Board

## PRINT HEAD OPERATION

When the print head is in the nonprinting state, each armature is attracted by the permanent magnet, and the springs holding the armatures are compressed by the thickness of the spacer. Therefore, the print wires, which are fastened to the individual armatures, are held retracted within the wire guide.

When signals corresponding to a character to be printed are detected by the control circuit, currents flow through the corresponding coils to nullify the magnetic flux generated by the permanent magnet assembly. With the magnetic flux nullified, the print wire coil armatures are driven toward the platen by the force of the armature springs. The print wires, fastened to the armatures, are ejected from the tip of the wire guide and strike the paper through the ribbon.

After the character is printed, the magnetic flux of the permanent magnet assembly attracts the armatures again which retract the print wires back into the wire guide.

The print head has a built-in thermistor to prevent the coils from overheating.

# SPACE MECHANISM AND OPERATION

The spacing operation is performed by the DC motor driving the carriage frame, which is guided by the carriage shaft mounted parallel to the platen. The DC motor is mounted on the bottom of the carriage frame.

The space mechanism consists of the following items:

- DC Motor with Motor Gear
- Carriage Frame
- Carriage Shaft
- Space Rack
- Slit Sensor
- Slit Disk

The carriage, with the print head and space motor mounted on it, moves parallel to the platen along the carriage shaft. As the space motor rotates counterclockwise, the motor gear is driven to the right along the space rack, and as a result, the carriage is also driven to the right.

The spacing mechanism is designed such that when the space motor rotates one turn, the carriage frame moves 0.8 inches (20.32 mm).

Motor rotation also rotates the slit disk, and the slits pass through the slit sensor. The position of the carriage frame can be obtained by counting the number of slits detected by the slit sensor.

# RIBBON FEED MECHANISM AND OPERATION

The ribbon feed mechanism feeds the ribbon synchronously with the spacing operation. The mechanism is driven by the space motor.

The ribbon feed mechanism consists of the following items:

- Ribbon Feed Gear Assembly
- Ribbon Gear (Space Motor)
- Ribbon Cartridge

## RIBBON FEED OPERATION

As the space motor rotates, the ribbon gear on the space motor shaft rotates to drive the drive gear in the ribbon cartridge via the ribbon feed gear assembly. As a result, the ribbon is fed.

In bidirectional printing, the ribbon gear rotational direction reverses every time the carriage reverses direction. In this case, the gears in the ribbon

feed gear assembly switch the rotational direction to feed the ribbon in a fixed direction.

### RIBBON CARTRIDGE

A one-way-feed endless ribbon is used. Ink is replenished by the built-in ink tank in the ribbon cartridge. This assures clear printing.

## RECEIPT FEED MOTOR

The printer feeds paper by rotating the feed roll shaft assembly, which is driven by the receipt feed motor through a speed reduction gear. The paper is pinched between the feed roll shaft and pressure roll shaft (part of forms compensation assembly).

The receipt paper feed mechanism consists of the following items:

- Stepper Motor with Gear
- Receipt Feed Roll Shaft Assembly
- Forms Compensation Assembly

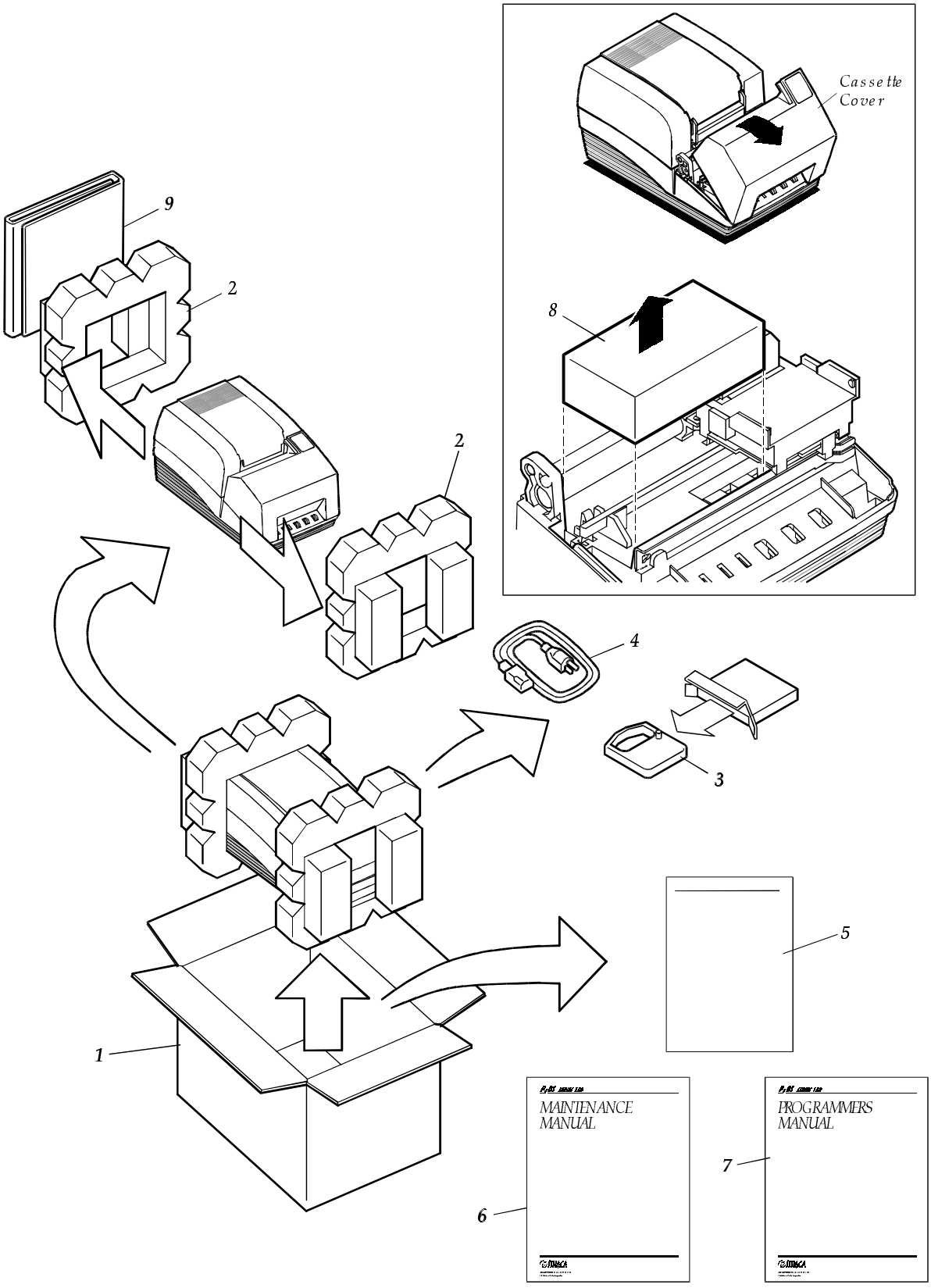
The receipt paper feed stepper motor is mounted on the right side of printer assembly, and its rotation is transmitted through the receipt feed motor drive train.

## PAPER EXHAUST

Paper is sensed in the printer by a paper-out flag assembly. When the flag trips the sensor on the PC board, the printer will go off-line and the ALARM LED will light.

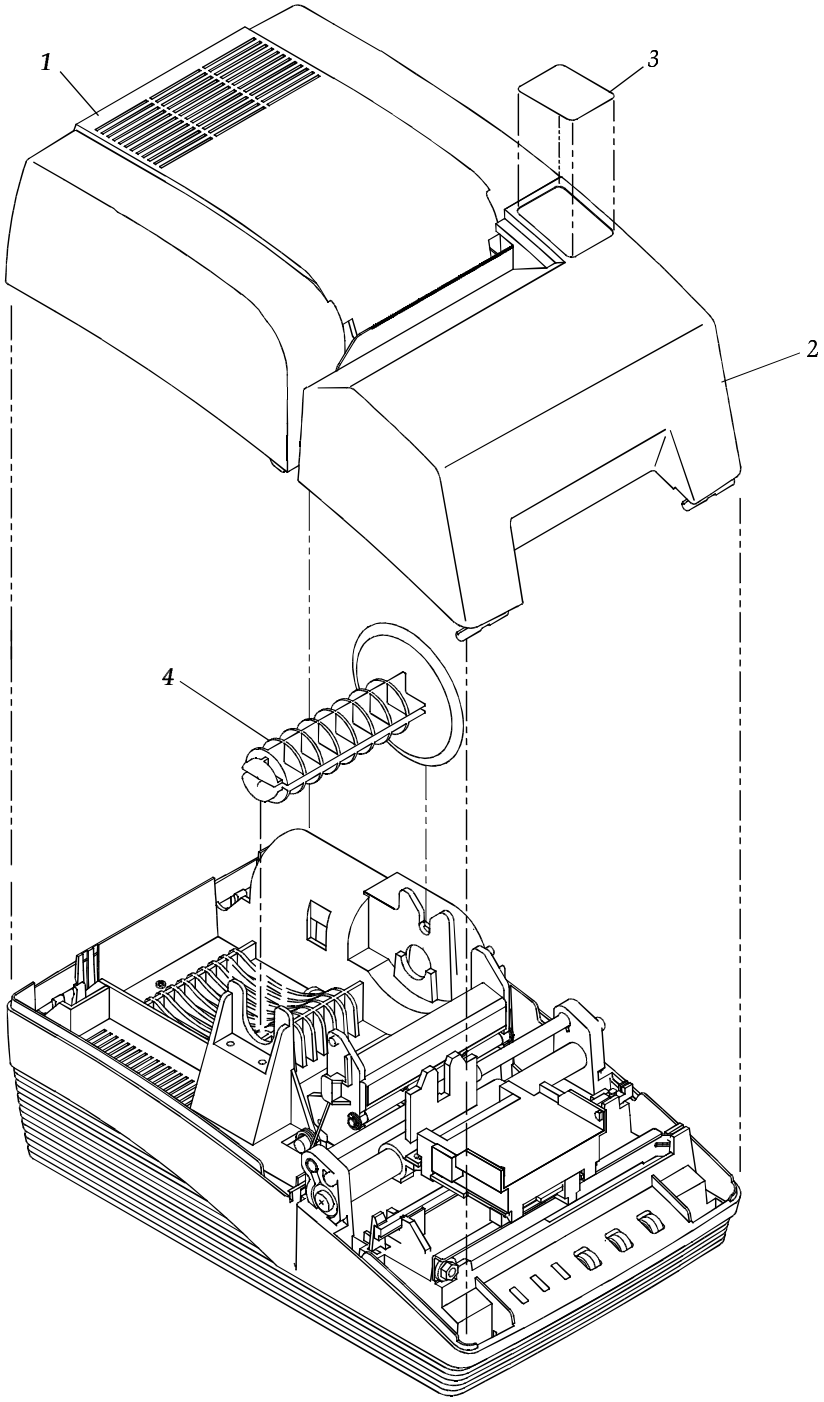
# APPENDIX B: PARTS LISTS

# PACKING MATERIALS/PUBLICATIONS



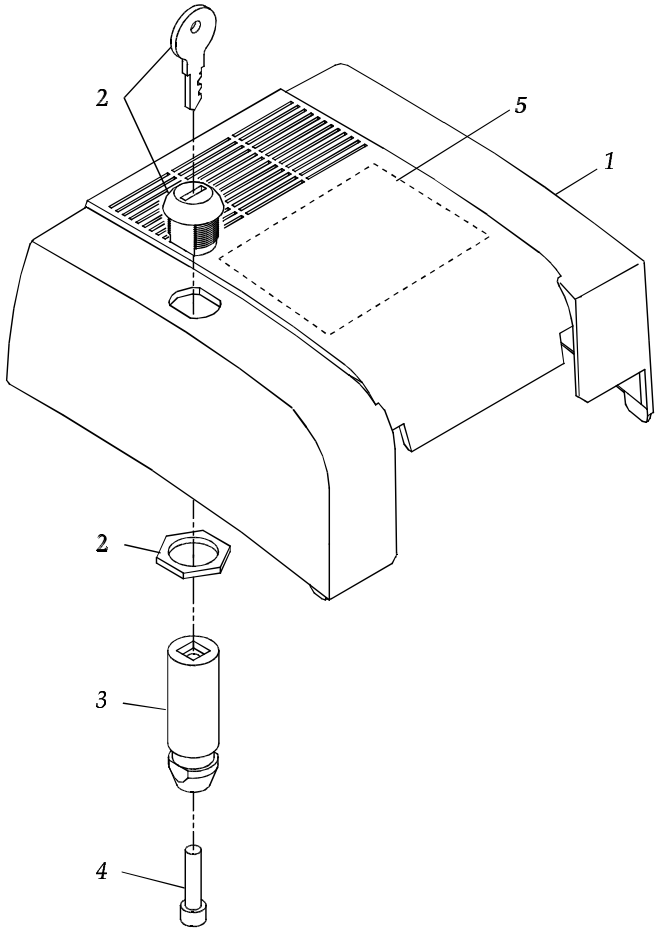
| ITEM NO. | PART NO. | QTY | DESCRIPTION |
|---|---|---|---|
| | 15-9306 | 1 | Packset, Ithaca (complete) |
| | 15-9308 | 1 | Packset, OKI Europe (complete) |
| | 15-9307 | 1 | Packset M150 White |
| 1 | 90-7579 | 1 | Carton - M90 White |
| 2 | 15-9739 | 1 | Foamset - M150 |
| 3 | 100-7565 | 1 | Ribbon Cassette (Black) |
| 3 | 100-7559 | 1 | Ribbon Cassette (Purple) |
| 4 | 06-0561 | 1 | 110V Power Supply Cable |
| 4 | 06-0806 | 1 | 230V Power Supply Cable |
| 5 | 15-9321 | 1 | Publications Kit, (includes the Operator's Guide) |
| 6 | 15-9320 | 1 | Maintenance Manual |
| 7 | 100-7961 | 1 | Programmer's Manual |
| 8 | 90-7568 | 1 | Retainer - Print head |
| 9 | 15-9712 | 1 | Spacer - M150 Pack |

# PRINTER ASSEMBLY



| ITEM NO. | PART NO. | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | | | See ‘Paper Cover’ on page 97 |
| 2 | | | See ‘Cassette Cover without Knife’ on page 98 |
| 2 | | | See ‘Cassette Cover with Knife’ on page 99 |
| 3 | 15-9441 | 1 | Label (Ithaca) |
| 3 | 15-9376 | 1 | Label (UTC) |
| 3 | 15-9377 | 1 | Label (OKI Latin) |
| 3 | 15-9323 | 1 | Label (OKI) |
| 3 | 15-9902 | 1 | Label (Telecom) |
| 4 | 90-6415 | 1 | Spindle - Take-up |

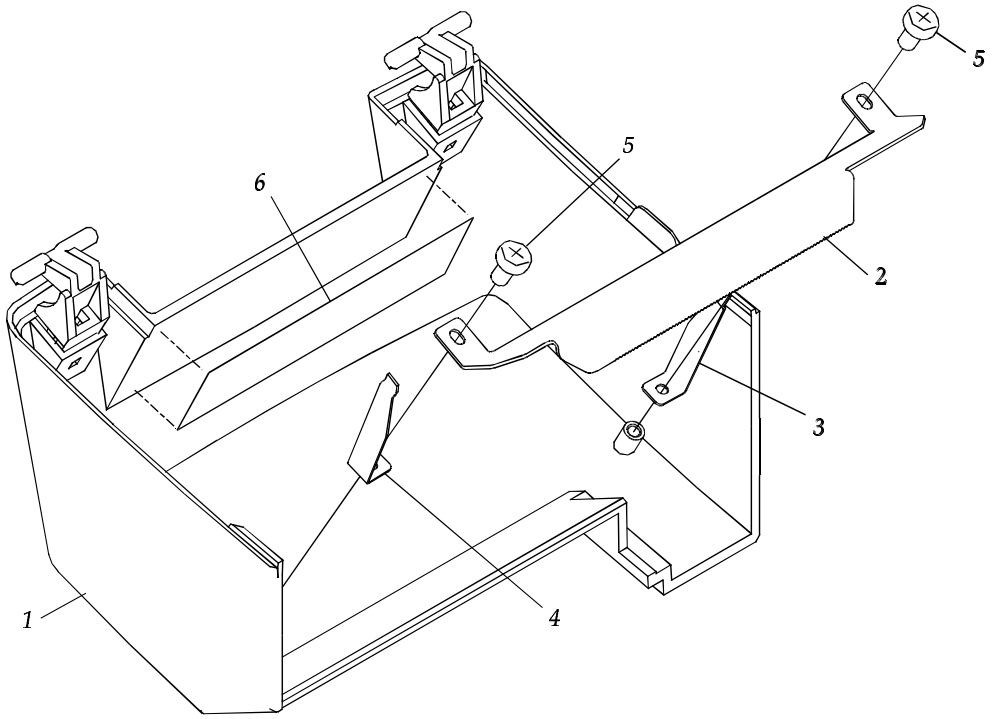
# PAPER COVER




| ITEM NO. | PART NO. | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 15-8260 | 1 | Cover - Standard Paper (Lt. Tan) |
| 1 | 15-9355 | 1 | Cover - Knife Paper (Lt. Tan) |
| 1 | 15-9356 | 1 | Cover - Knife Paper (GTECH Black) |
| 1 | 15-9340 | 1 | Cover - Paper With Journal Lock (Lt. Tan) |
| 2 | 98-1284 | 1 | Lockset |
| 3 | 06-1269 | 1 | Extension Journal Lock |
| 4 | 98-0707 | 1 | Screw - ¼ x 28 x 1 |
| 5 | 15-9405 | 1 | Label - Paper Loading without Knife with Bail |
| 5 | 15-9707 | 1 | Label - Paper Loading with Knife and Bail |
| 5 | 15-9946 | 1 | Label - Paper Loading without Knife and Bail |
| 5 | 15-9947 | 1 | Label - Paper Loading with Knife without Bail |

* When ordering a Paper Cover Assembly also order a Paper Loading Label (item 5)

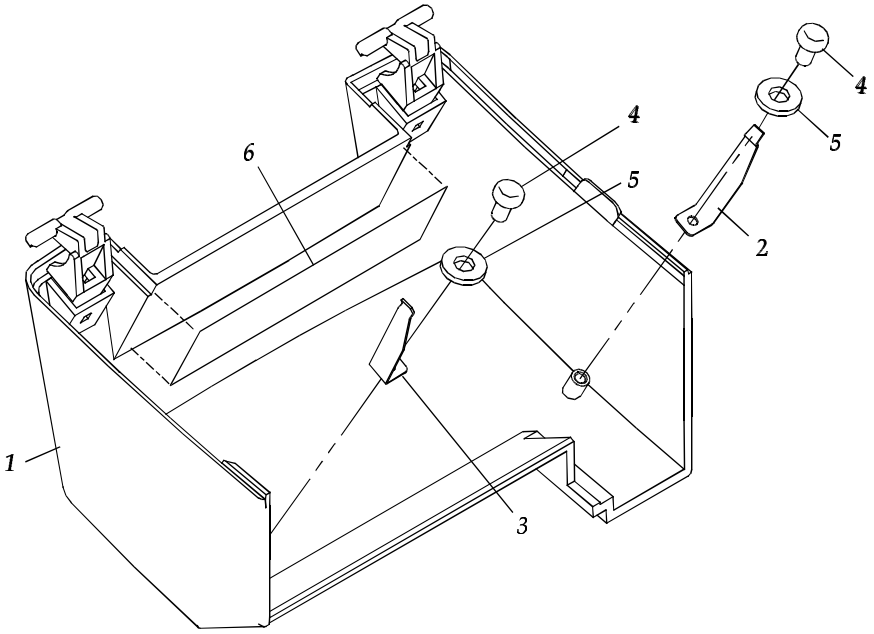
# CASSETTE COVER WITHOUT KNIFE




| ITEM NO. | PART NO. | QTY | DESCRIPTION |
|---|---|---|---|
| | 15-9345 | 1 | Cover - Cassette Standard Assembly (Lt. Tan) * |
| | 15-9346 | 1 | Cover - Cassette OKI Europe Assembly (Lt. Tan) * |
| 1 | 15-8250 | 1 | Cover - Hinged Cassette (Lt. Tan) |
| 1 | 15-9724 | 1 | Cover - OKI Europe Cassette (Lt. Tan) |
| 2 | 15-8077 | 1 | Tear Bar |
| 3 | 15-9998 | 1 | Detent - Right |
| 4 | 15-9999 | 1 | Detent - Left |
| 5 | 98-2052 | 2 | Screw - #6-20x.375 PHPS PHD |
| 6 | 15-9706 | 1 | Label - Cassette Loading |

* When ordering a Cassette Cover Assembly also order a Cassette Label (item 6)

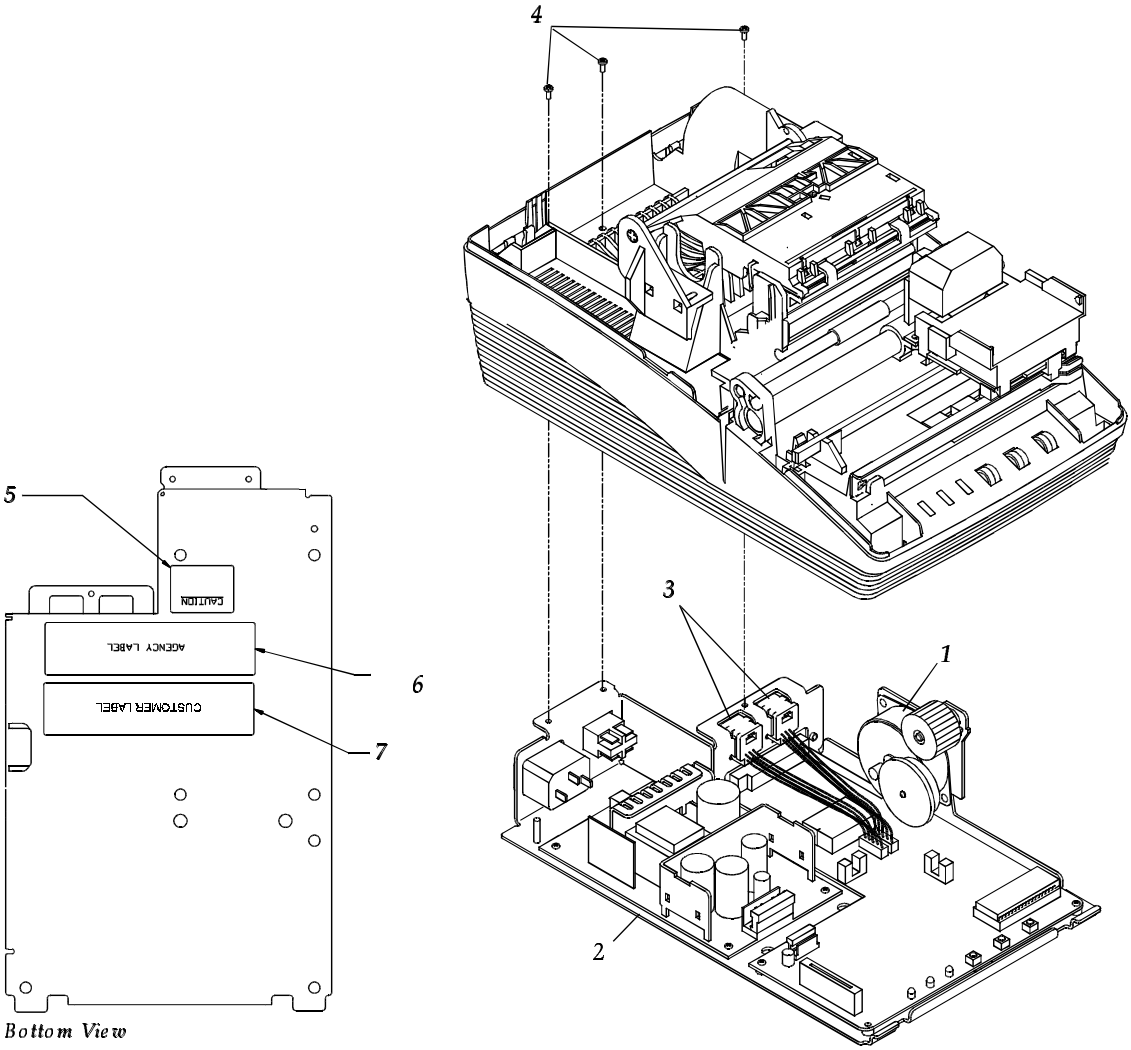
# CASSETTE COVER WITH KNIFE




| ITEM NO. | PART NO. | QTY | DESCRIPTION |
|---|---|---|---|
| | 15-9350 | 1 | Cover - Knife Cassette Assembly (Lt. Tan) * |
| | 15-9351 | 1 | Cover - Knife Cassette Assembly (GTECH Black) * |
| 1 | 15-9360 | 1 | Cover - Knife Cassette (Lt. Tan) |
| 1 | 15-9361 | 1 | Cover - Knife Cassette (GTECH Black) |
| 2 | 15-9998 | 1 | Detent - Right |
| 3 | 15-9999 | 1 | Detent - Left |
| 4 | 98-2052 | 2 | Screw - #6-20x.375 PHPS PHD |
| 5 | 98-1231 | 2 | Washer - M4 Flat |
| 6 | 15-9776 | 1 | Label - Cassette Loading |

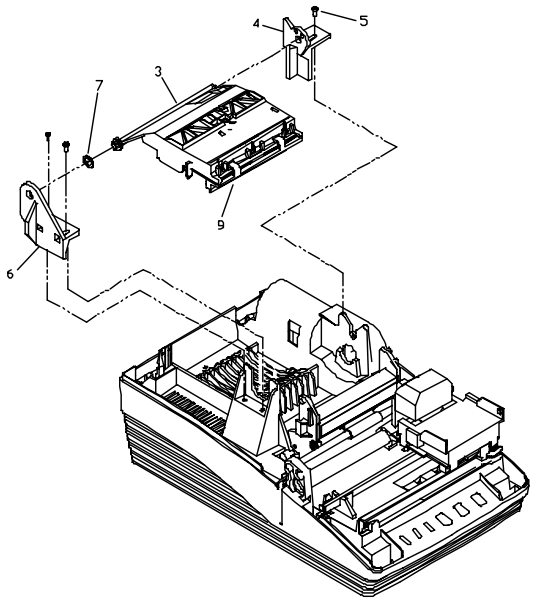
* When ordering a Cassette Knife Cover Assembly also order a Cassette Label (item 6)

# ELECTRONIC BASE



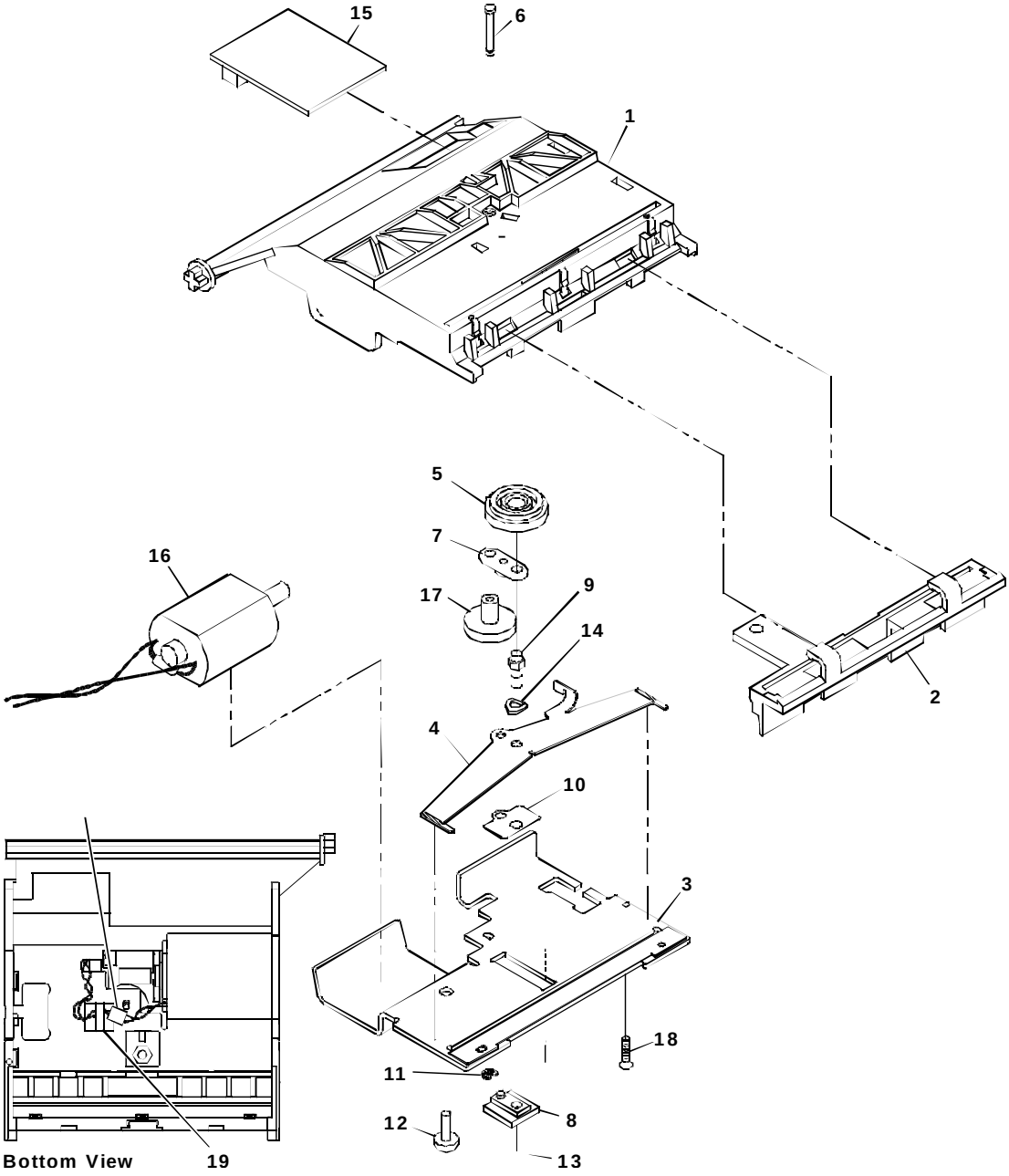

| ITEM NO. | PART NO. | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | | | See ‘Linefeed Motor and Gears’ on page 113 |
| 2 | | | See ‘Electronic Base Assembly’ on page 114 |
| 3 | 15-9780 | 1 | Cash Drawer Harness (Standard) |
| 3 | 15-9913 | 1 | Cash Drawer Harness (Epson) |
| 4 | 521-9880020 | 3 | Screw - #4-40x.25 SEMS PHPS PHD (Qty 10) |
| 5 | 90-9933 | 1 | Label - Caution (Epson) |
| 5 | 90-9934 | 1 | Label - Caution (Ithaca) |
| 5 | 90-9935 | 1 | Label - Caution (Star) |
| 6 | 98-7976 | 1 | Label - Agency |
| 7 | 98-7976 | 1 | Label - Optional Secondary |

# CUTTER



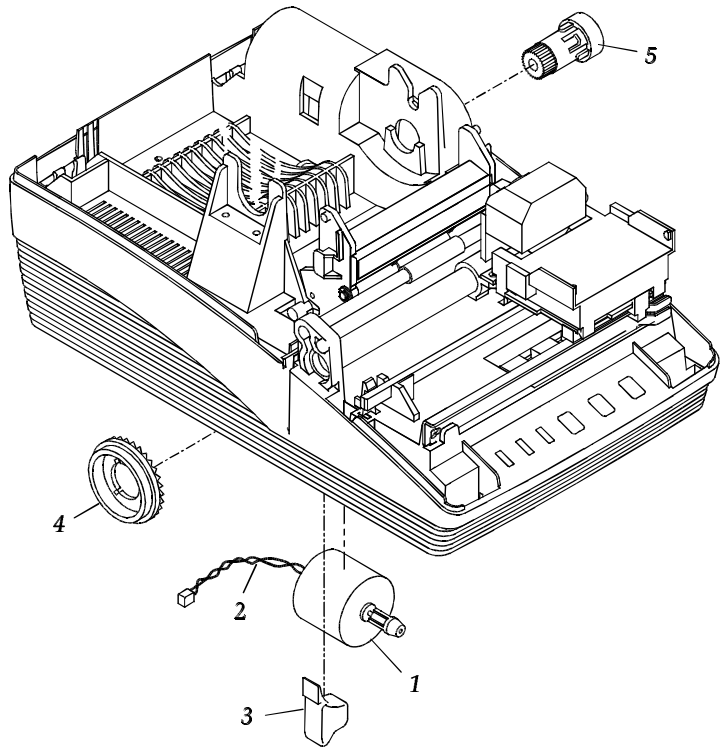

| ITEM NO. | PART NO. | QTY | DESCRIPTION |
|---|---|---|---|
| 3 | 15-9304 | 1 | See ‘Knife Module Assembly’ on page 102 |
| 4 | 15-8052 | 1 | Mount - Right Knife Bracket |
| 6 | 15-8051 | 1 | Mount - Left Knife Bracket |
| 5 | 98-7608 | 3 | Screw - #4 Plastic Thread Forming |
| 7 | 15-8124 | 1 | Spacer - Knife |

# KNIFE MODULE ASSEMBLY



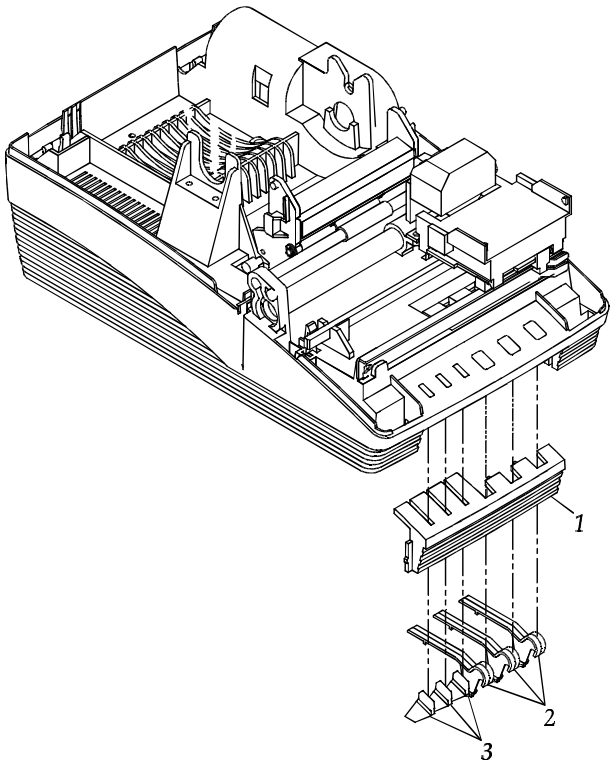
| ITEM NO. | PART NO. | QTY | DESCRIPTION |
|---|---|---|---|
| | 15-9304 | 1 | Assembly - M150 Knife |
| 1 | 15-9919 | 1 | Frame - Knife |
| 2 | 15-8121 | 1 | Guide - Knife |
| 3 | 15-9985 | 1 | Assembly - Knife Plate |
| 4 | 90-9463 | 1 | Blade - Moving (Sharp) |
| 5 | 90-9673 | 1 | Gear - Knife 36 Tooth |
| 6 | 90-9742 | 1 | Pin - Knife |
| 7 | 90-9459 | 1 | Rod - Connecting |
| 8 | 90-6095 | 1 | Slider - Pad (Brass) |
| 9 | 90-6080 | 1 | Stud - Knife |
| 10 | 90-6082 | 1 | Film - Teflon |
| 11 | 98-6083 | 1 | Retainer - E-ring |
| 12 | 98-2052 | 1 | Screw - #6-20 x 0.375 PHPS PHD |
| 13 | 98-2185 | 1 | Nut - Hex Lock |
| 14 | 98-6084 | 1 | Washer - Spring |
| 15 | 90-9061 | 1 | PCB Assembly |
| 16 | 15-9986 | 1 | Assembly - Knife Motor with Resistor |
| 17 | 90-9182 | 1 | Gear - Compound |
| 18 | 98-9951 | 1 | Screw - #0-80x5/16 SS Flat HD |
| 19 | 98-9187 | 1 | Retainer - Wire |

# TAKE-UP MOTOR ASSEMBLY



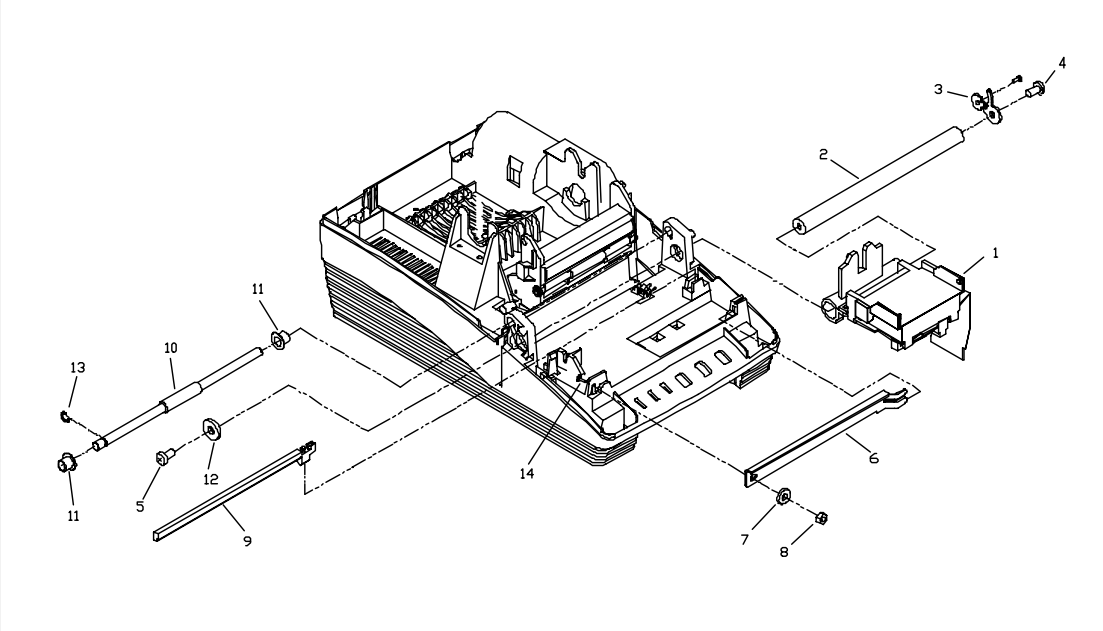

| ITEM NO. | PART NO. | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 15-9311 | 1 | Assembly - Take-up Motor (includes Harness) |
| 2 | 15-8306 | 1 | Harness - Take-up Drive |
| 3 | 15-8066 | 1 | Insert - Take-up Motor |
| 4 | 15-8206 | 1 | Gear - Take-up |
| 5 | 15-8210 | 1 | Shaft - Take-up Gear |

# SWITCH ASSEMBLY AND LIGHT PIPES



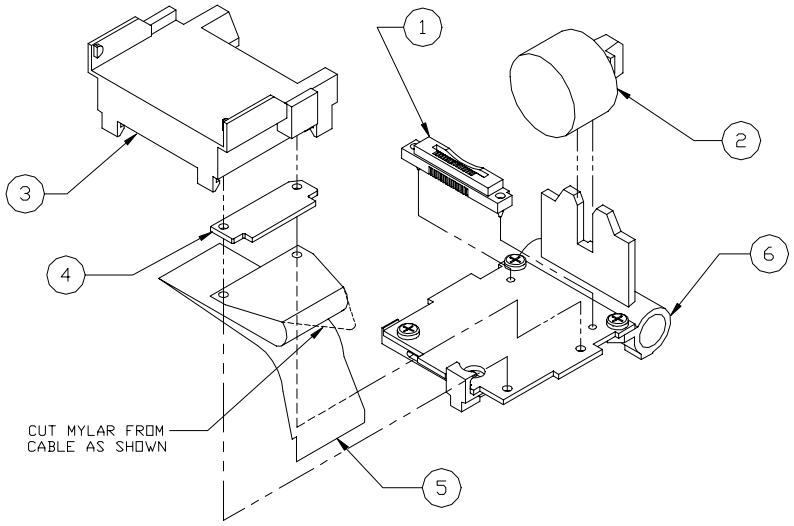

| ITEM NO. | PART NO. | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 15-8030 | 1 | Base - Filler (Light Tan) |
| 1 | 15-8031 | 1 | Base - Filler (GTECH Black) |
| 2 | 15-8040 | 3 | Button - M150 |
| 3 | 15-8050 | 3 | Lightpipe - Keypad |

# PRINT MECHANISM ASSEMBLY



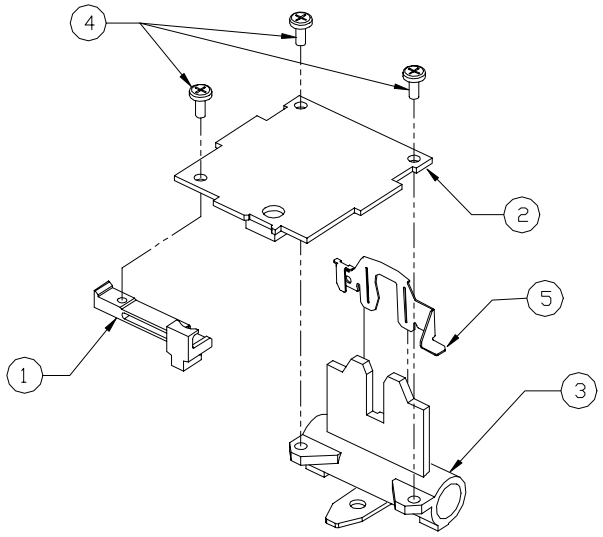

| ITEM NO. | PART NO. | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 15-9305 | 1 | See ‘Carriage Assembly’ on page 107 |
| 2 | 15-8068 | 1 | Shaft - Carriage |
| 3 | 15-9966 | 1 | Link - Ground |
| 4 | 98-2112 | 1 | Screw - M4x8 mm PHPS PHD SEMS |
| 5 | 98-8130 | 1 | Screw - #4-40x0.25 PLT PHPS (Qty 10) |
| 6 | 15-8079 | 1 | Rail - Carriage |
| 7 | 98-2014 | 1 | Washer - M3 Flat (Qty 10) |
| 8 | 98-0621 | 1 | Nut - M3 Hex with Lockwasher (Qty 10) |
| 9 | 90-6056 | 1 | Rack - Space |
| 10 | 15-8069 | 1 | Shaft - Feed |
| 11 | 98-8073 | 2 | Bearing - M150 Flanged Nyliner (Qty 10) |
| 12 | 98-9324 | 1 | Washer - Flat (Qty 10) |
| 13 | 520-9800104 | 1 | Retainer - C-Ring 0.23 diameter (Qty 10) |
| 14 | 98-0897 | 1 | Screw - M3x8mm PHPS PHD (Qty 10) |

# CARRIAGE ASSEMBLY



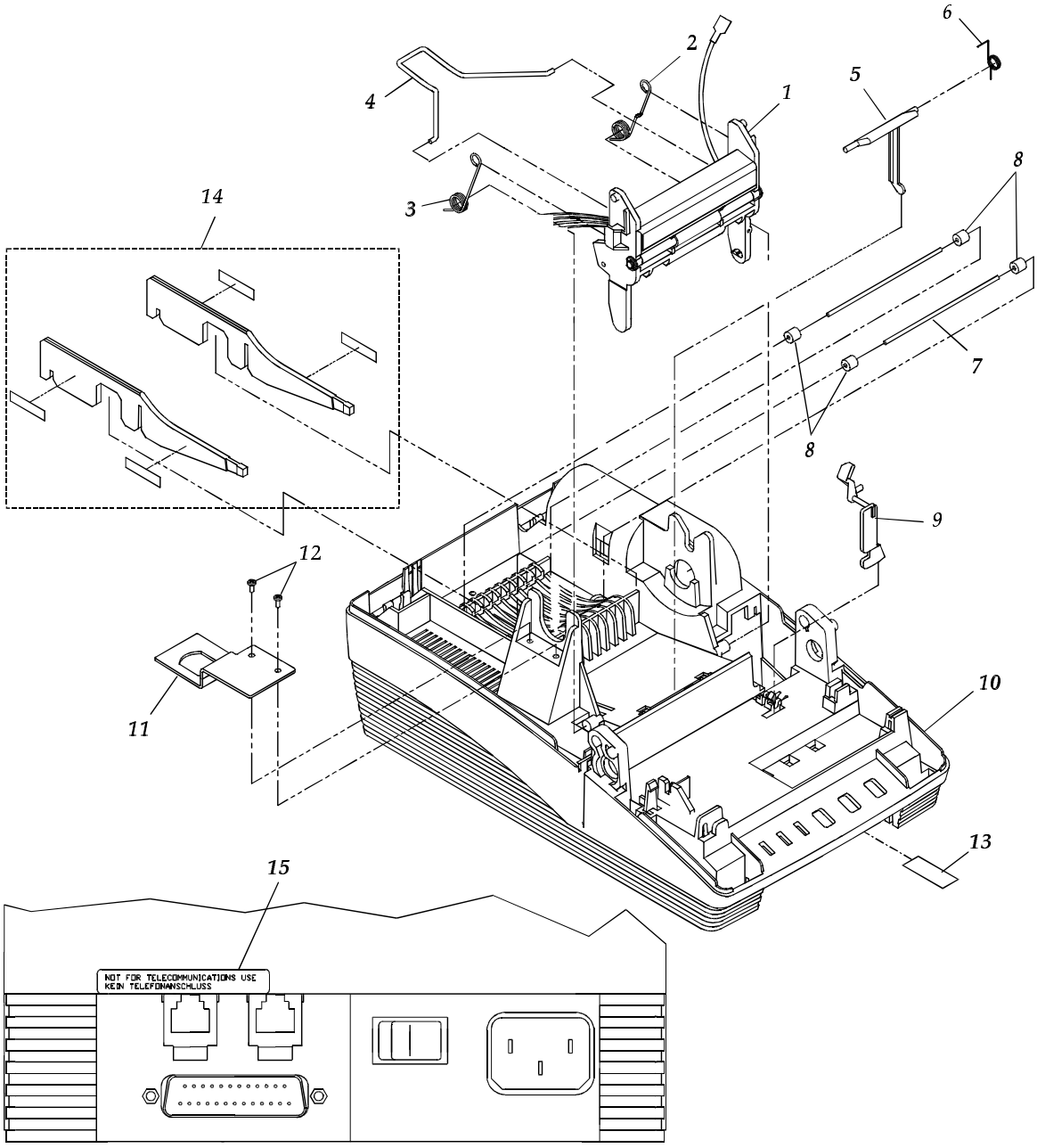

| ITEM NO. | PART NO. | QTY | DESCRIPTION |
|---|---|---|---|
| | 15-9305 | 1 | Assembly - Carriage |
| 1 | 06-0574 | 1 | Connector - Print head |
| 2 | 90-7337 | 1 | Print head |
| 3 | 90-7338 | 1 | Assembly - Ribbon Feed Gear |
| 4 | 90-7339 | 1 | Rubber - Contact Pressure |
| 5 | 90-7340 | 1 | Cable - Head |
| 6 | 90-7431 | 1 | Assembly - Carriage Motor |

# CARRIAGE MOTOR ASSEMBLY




| ITEM NO. | PART NO. | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 06-0575 | 1 | Slider - OKI |
| 2 | 06-0578 | 1 | Assembly - Space Motor |
| 3 | 90-7341 | 1 | Roller - Carriage |
| 4 | 90-7342 | 3 | Screw - Carriage |
| 5 | 06-0571 | 1 | Clamp - Print head |

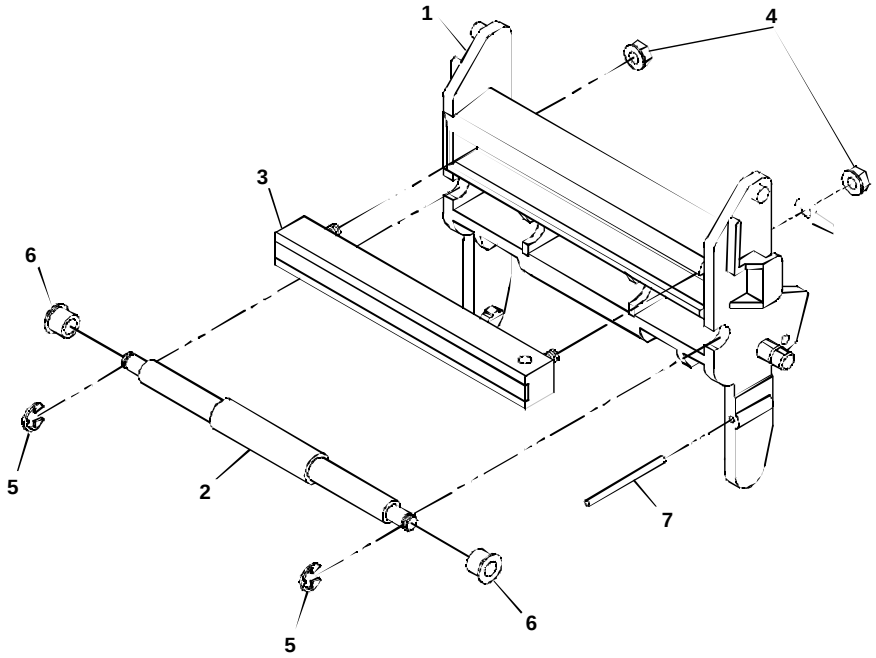
# MECHANISM BASE




*Back View of Printer*

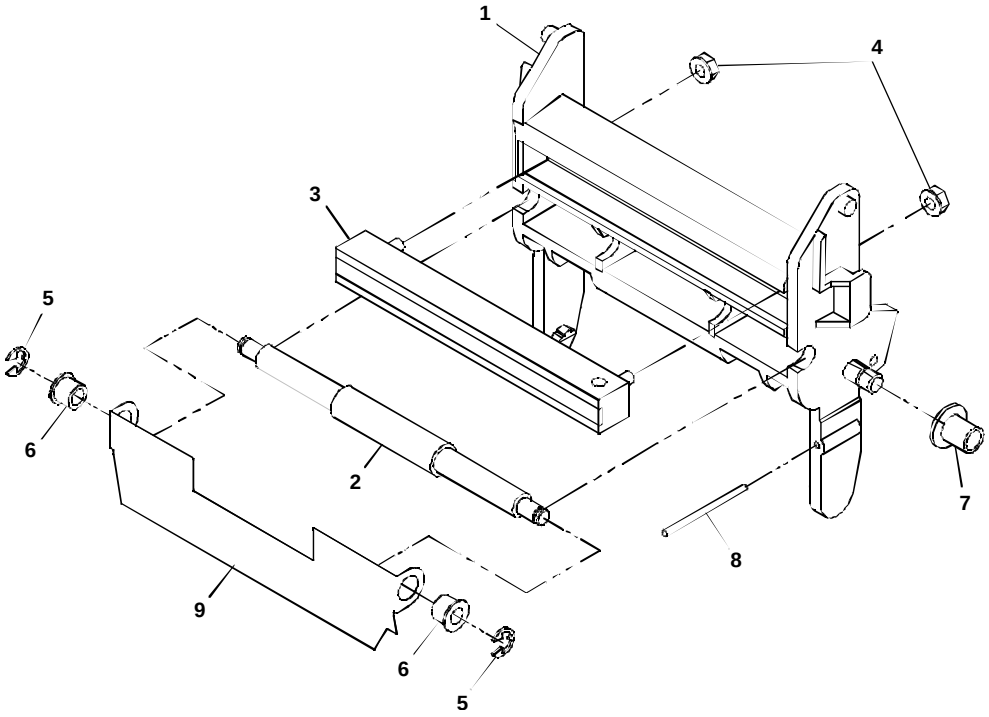
| ITEM NO. | PART NO. | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | | 1 | See 'Forms Comp Assembly (Models 151 and 152)' on page 111 |
| 1 | | 1 | See 'Forms Comp Assembly (Model 153)' on page 112 |
| 2 | 15-8208 | 1 | Spring - Right |
| 3 | 15-8209 | 1 | Spring - Left |
| 4 | 15-8055 | 1 | Bail - Paper |
| 5 | 15-8107 | 1 | Flag - Paper Out |
| 6 | 15-9183 | 1 | Spring - Paper Exhaust (Qty 10) |
| 7 | 15-9797 | 2 | Rod - Roller Support (Use with 3.25 Wide Paper Only) |
| 8 | 15-9798 | 4 | Roller - Paper Supply (Use with 3.25 Wide Paper Only) |
| 9 | 15-9907 | 1 | Flag - Validation |
| 10 | 15-9920 | 1 | Base (Light Tan) |
| 10 | 15-9791 | 1 | Base (Black) |
| 11 | 15-8057 | 1 | Bracket - Journal Lock (Models with Journal Lock Only) |
| 12 | 98-7608 | 2 | Screw - #4 Plastic Thread Forming (Models with Journal Lock Only) |
| 13 | 98-2482 | 1 | Tape - Print head Cable (Qty 10) |
| 14 | 15-9749 | 1 | Kit - Spacer 2.75" Paper (includes 4 spacers 15-8076 and 8 pieces of tape 90-9188) |
| 14 | 15-8076 | 1 | Kit - Spacer 3.00" Paper (includes 2 spacers 15-8076 and 4 pieces of tape 90-9188) |
| 15 | 98-7871 | 1 | Label - Telecommunications |

# FORMS COMP ASSEMBLY (MODELS 151 and 152)



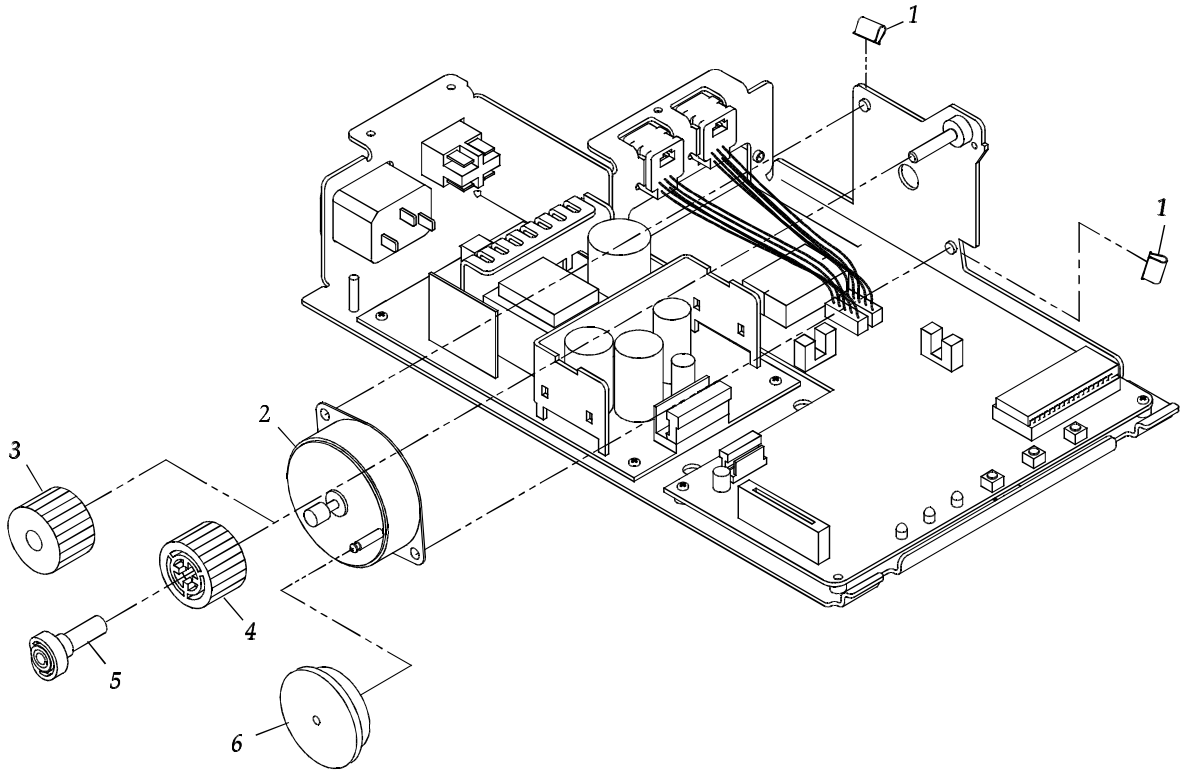

| ITEM NO. | PART NO. | QTY | DESCRIPTION |
|---|---|---|---|
| | 15-8109 | 1 | Assembly - M151/152 Forms Comp |
| 1 | 15-8103 | 1 | Frame - Forms Comp |
| 2 | 15-8225 | 1 | Roller - Pressure with Rubber |
| 3 | 15-8230 | 1 | Platen with Insert |
| 4 | 98-0621 | 2 | Nut - M3 Hex with Lockwasher (Qty 10) |
| 5 | 98-8223 | 2 | Keeper - ‘E’ Ring |
| 6 | 15-8221 | 2 | Bearing - Pressure Roller |
| 7 | 15-8213 | 2 | Pin - 1” Roller |

# FORMS COMP ASSEMBLY (MODEL 153)



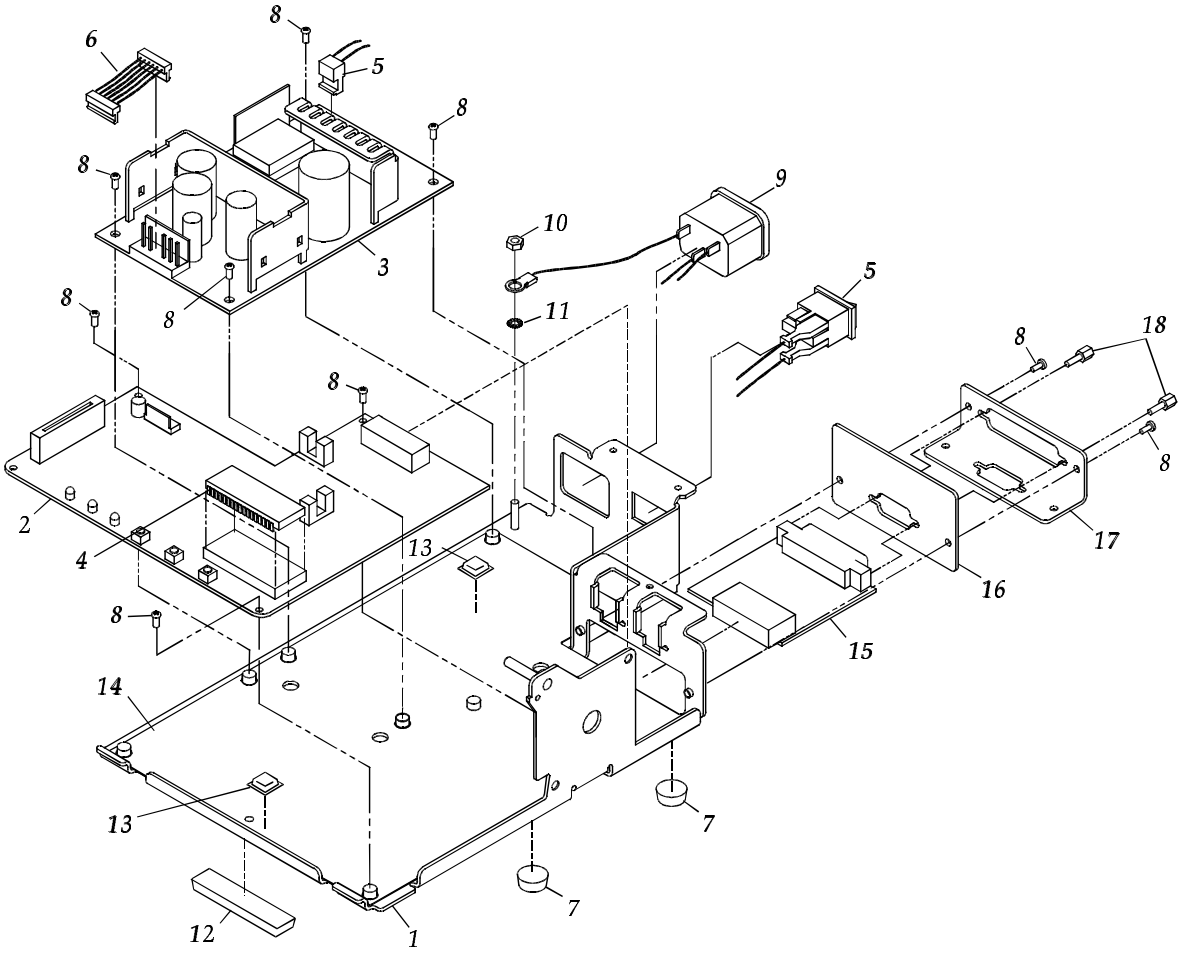

| ITEM NO. | PART NO. | QTY | DESCRIPTION |
|---|---|---|---|
| | 15-8110 | 1 | Assembly - M153 Forms Comp |
| 1 | 15-8103 | 1 | Frame - Forms Comp |
| 2 | 15-8225 | 1 | Roller - Pressure with Rubber |
| 3 | 15-8230 | 1 | Platen with Insert |
| 4 | 98-0621 | 2 | Nut - M3 Hex with Lockwasher (Qty 10) |
| 5 | 98-8223 | 2 | Keeper - ‘E’ Ring |
| 6 | 15-8221 | 2 | Bearing - Pressure Roller |
| 7 | 15-8204 | 1 | Bearing |
| 8 | 15-8213 | 2 | Pin - 1” Roller |
| 9 | 15-8222 | 1 | Plate - Forms Comp |

# LINEFEED MOTOR AND GEARS




| ITEM NO. | PART NO. | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 98-7970 | 2 | Clip - Retaining (Qty 10) |
| 2 | 06-0566 | 1 | Motor - OKI Linefeed |
| 3 | 15-8211 | 1 | Gear - Idler (Models 151 & 152 Only) |
| 4 | 15-8108 | 1 | Assembly - Clutch Gear (Model 153 Only) |
| 5 | 15-8200 | 1 | Assembly - Cam Shaft (Model 153 Only) |
| 6 | 50-1470 | 1 | Gear Plus Stepper |

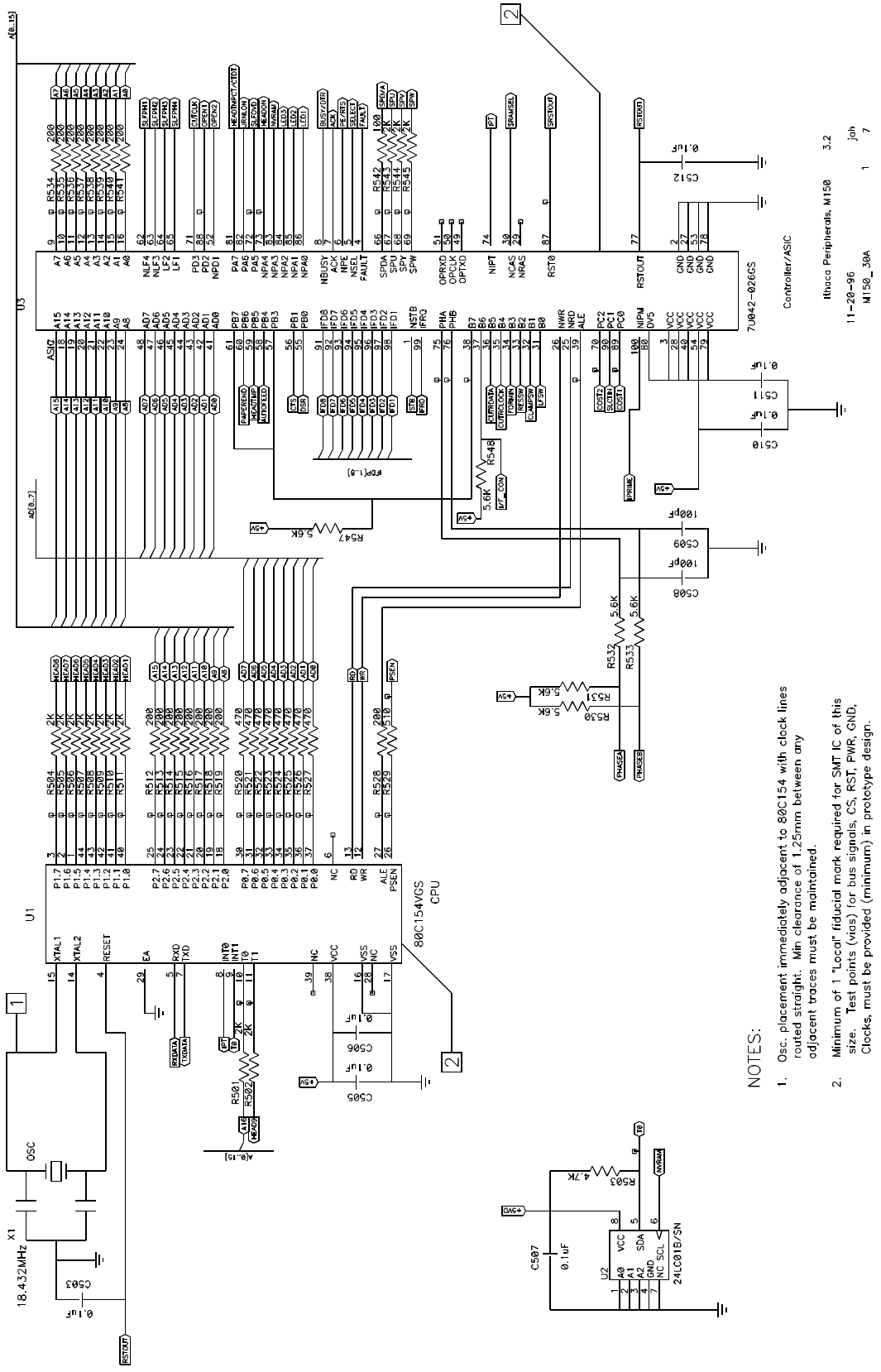
# ELECTRONIC BASE ASSEMBLY



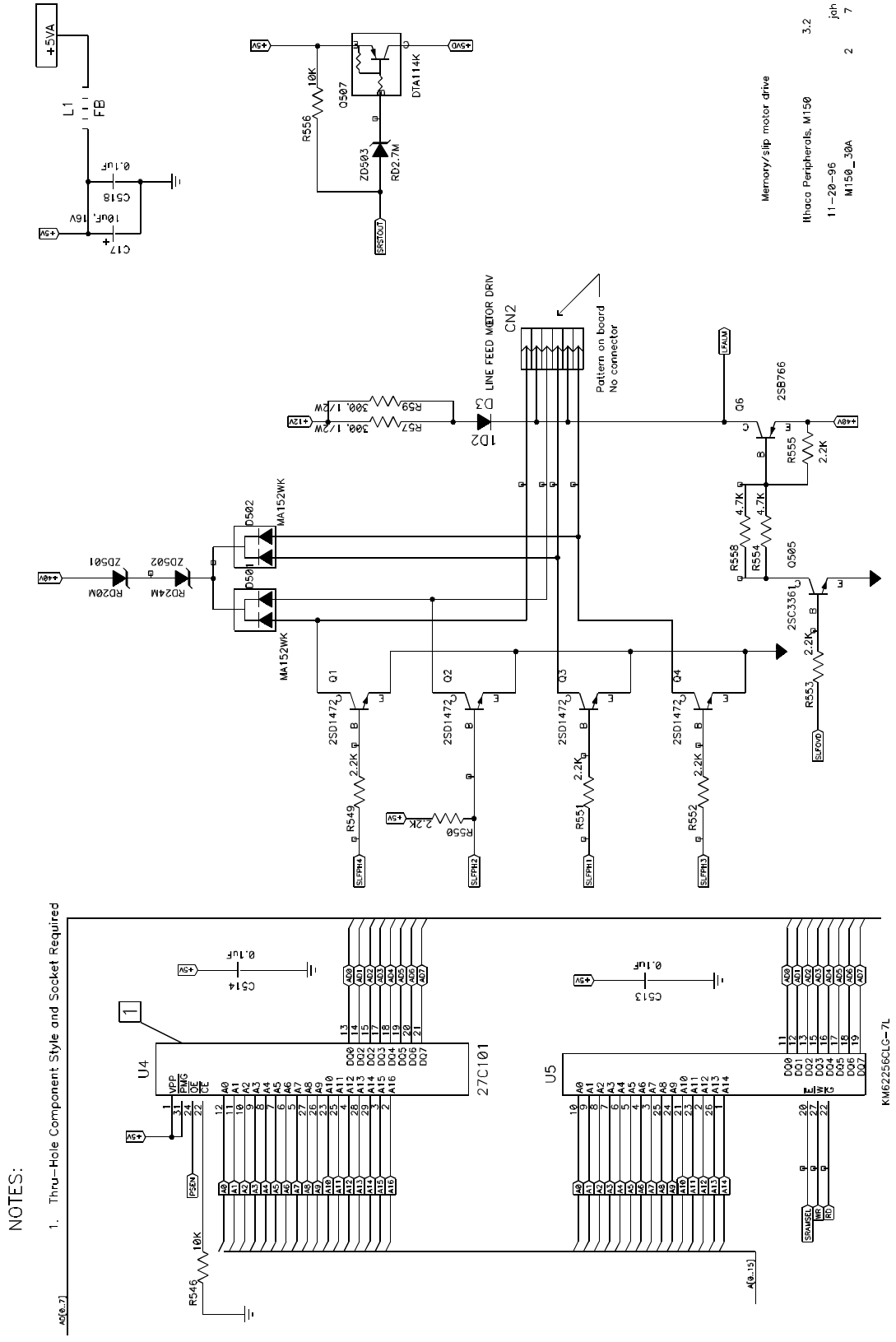
| ITEM NO. | PART NO. | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | 15-8061 | 1 | Base - Electronics |
| 2 | 15-9795 | 1 | Assembly - PCB M150 Controller |
| 3 | 98-9796 | 1 | Supply - Universal Power |
| 4 | 98-7309 | 1 | EPROM - 1 MEG |
| 5 | 90-7442 | 1 | Assembly - Power Supply Switch |
| 6 | 15-9143 | 1 | Harness - DC Power |
| 7 | 06-0553 | 2 | Foot - Rubber (Qty 10) |
| 8 | 521-9880020 | 7 | Screw - #4-40x0.25 SEMS PHPS PHD (Qty 10) |
| 9 | 15-9097 | 1 | Assembly - AC Input Connector |
| 10 | 525-9800002 | 1 | Nut - Hex #4-40 (Qty 10) |
| 11 | 98-0653 | 1 | Lockwasher - M3 (Qty 10) |
| 12 | 15-9751 | 1 | Foot - 2” Long Rubber |
| 13 | 98-6614 | 2 | Foot - 0.40x0.40x0.10 Rubber |
| 14 | 15-9761 | 1 | Insulator - PC Board |
| 15 | 15-8302 | 1 | PC Board - Serial |
| 15 | 15-8301 | 1 | PC Board - Parallel |
| 16 | 15-9760 | 1 | Plate - Adapter |
| 17 | 15-8063 | 1 | Plate - Com PCB Mounting |
| 18 | 98-2033 | 1 | Screw - Jack (Qty 10) |

# APPENDIX C: SCHEMATICS

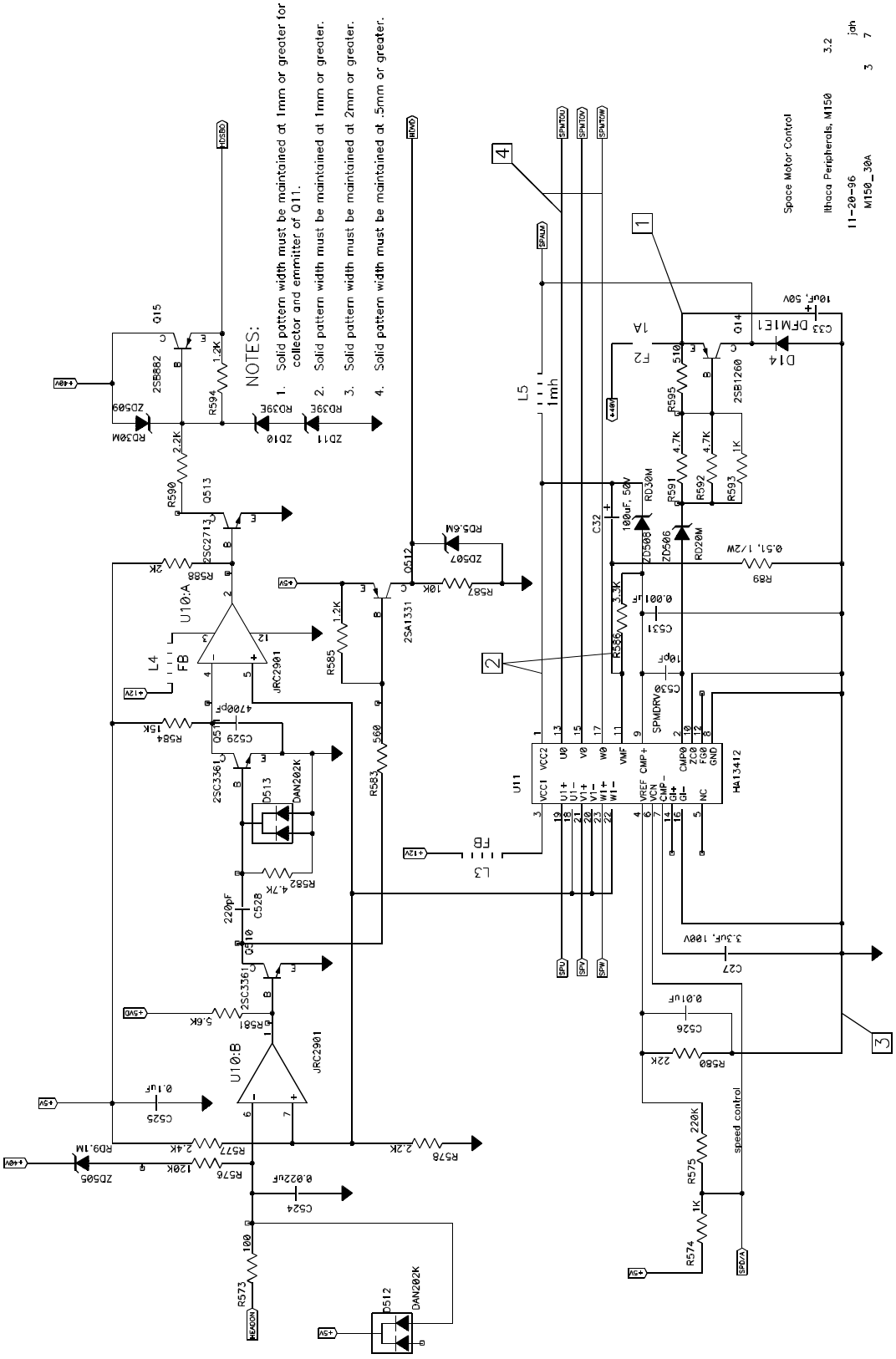
# CONTROLLER/ASIC


U1
80C154VGS
CPU
U3
7U042-026GS
Controller/ASIC
Khaos Peripherals, M150
3.2
11-20-96
M150_30A
X1
18.432MHz
OSC
U2
24LC01B/SN
NOTES:
1. Osc. placement immediately adjacent to 80C154 with clock lines routed straight. Min clearance of 1.25mm between any adjacent traces must be maintained.
2. Minimum of 1 "Local" fiducial mark required for SMT IC of this size. Test points (vias) for bus signals, CS, RST, PWR, GND, Clocks, must be provided (minimum) in prototype design.

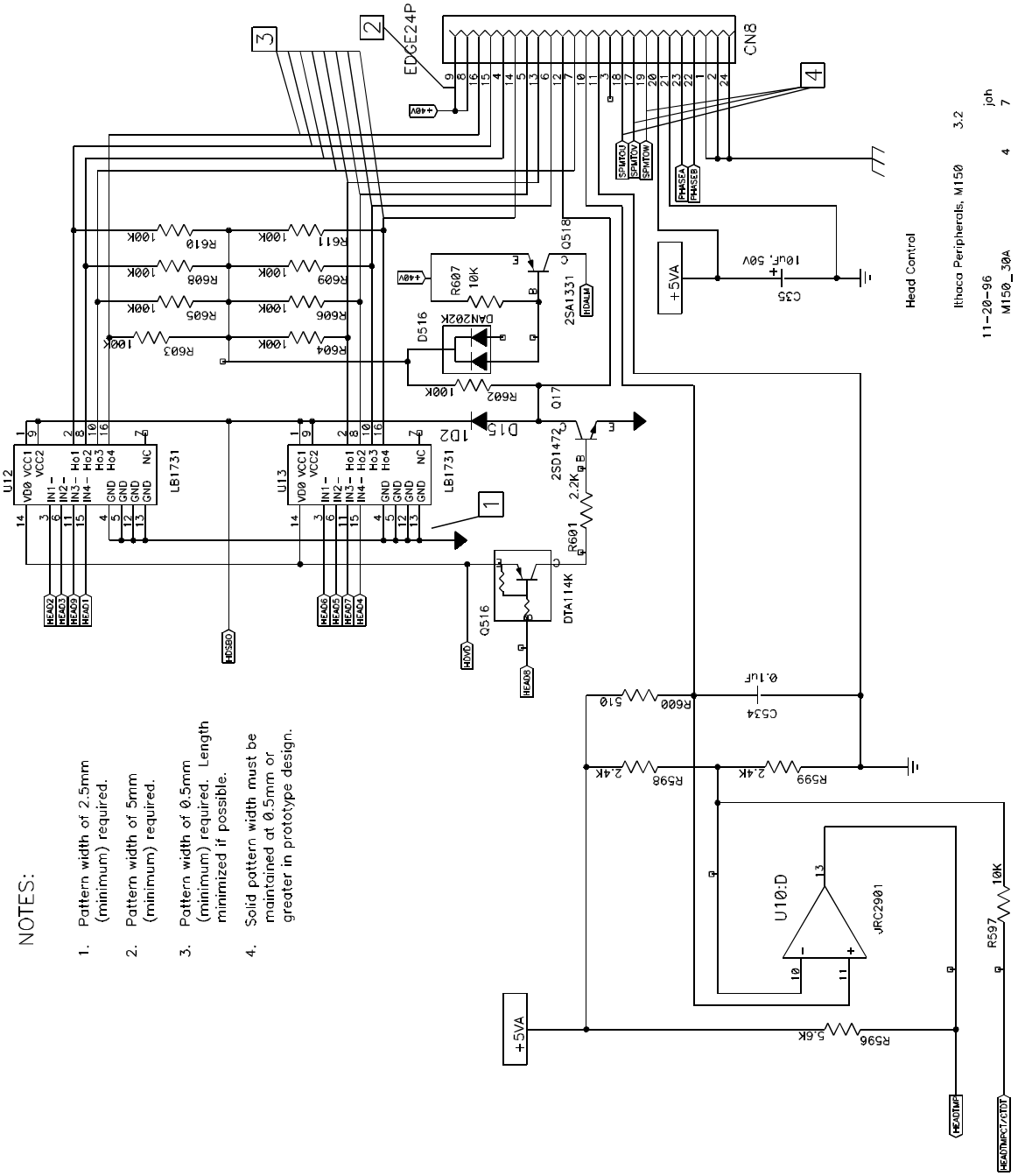
# MEMORY/SLIP MOTOR DRIVE



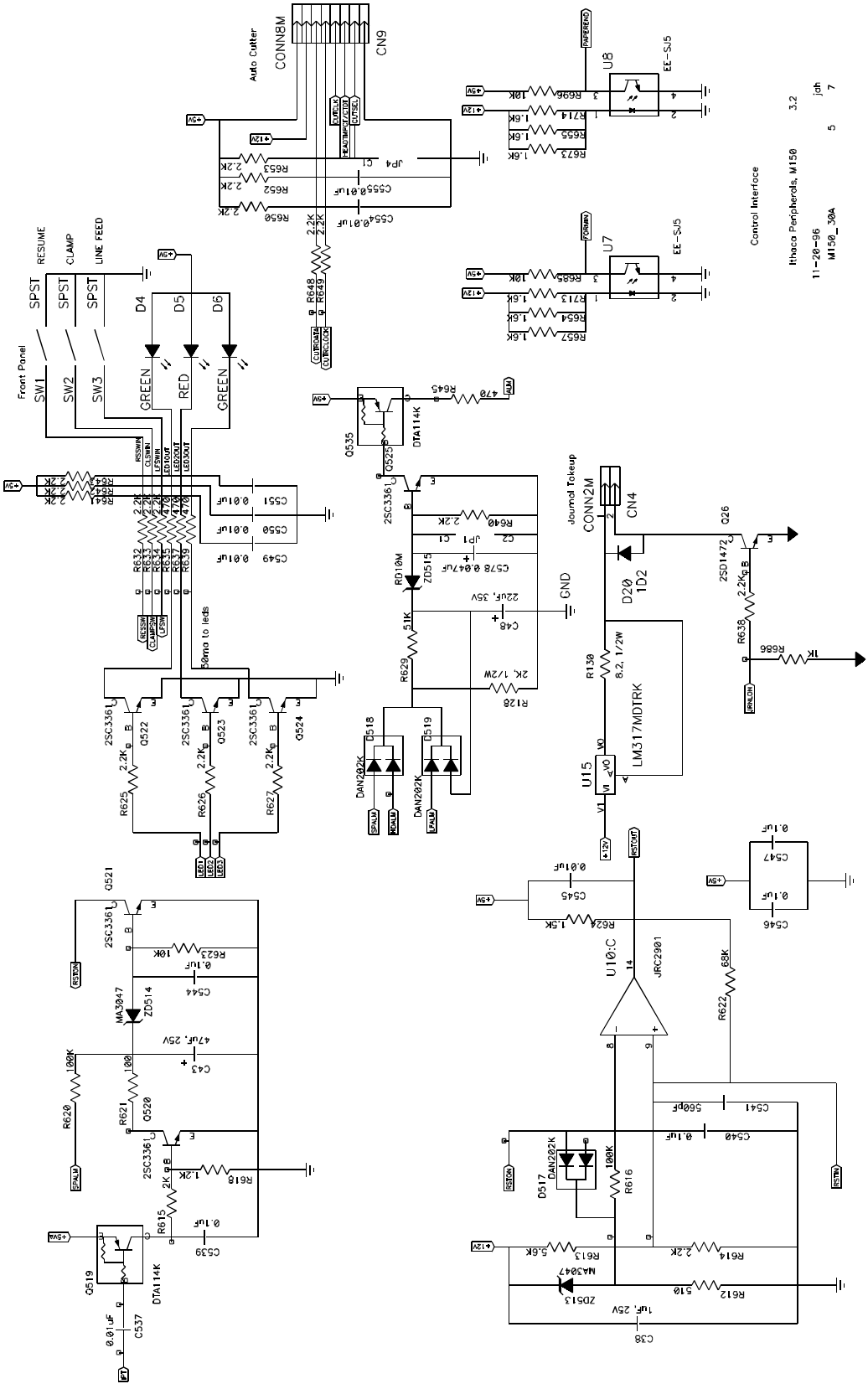
# SPACE MOTOR CONTROL



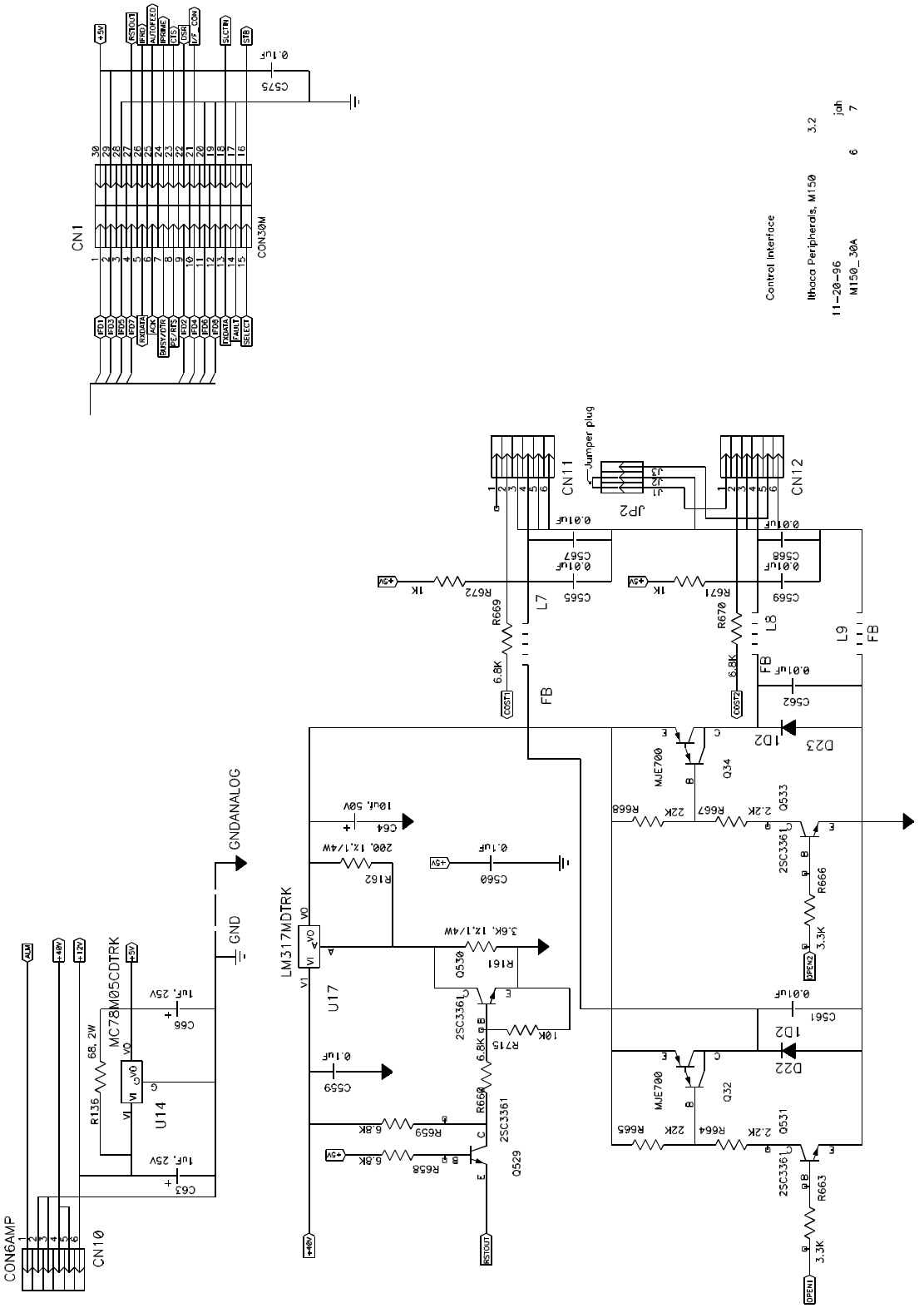
# HEAD CONTROL



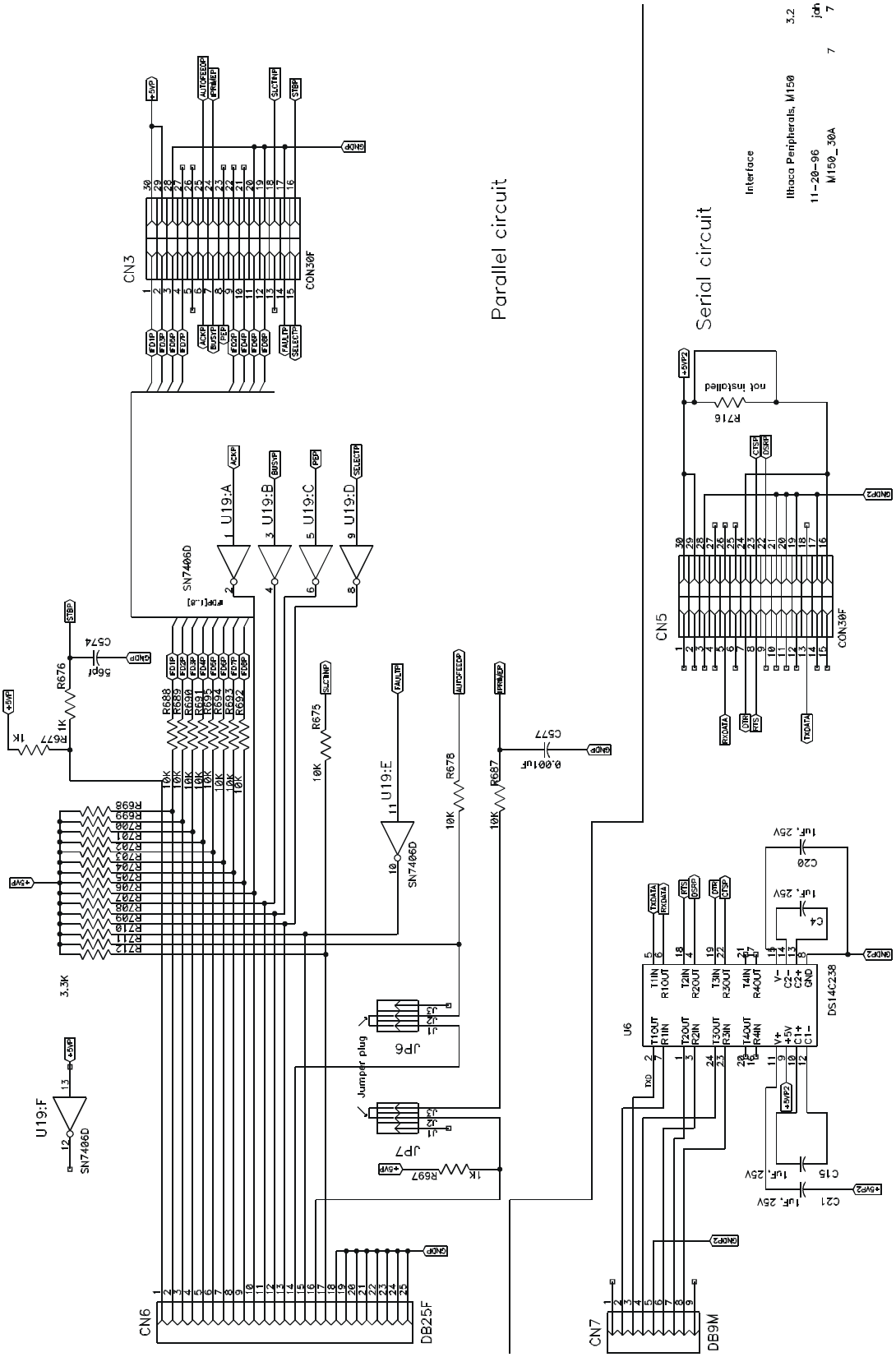
# CONTROL INTERFACE



# CONTROL INTERFACE



# INTERFACE


Parallel circuit
Serial circuit
Interface
Ithaca Peripherals, M150
11-20-96
M150_30A
CN3
CON30F
CN5
CON30F
not installed
R716
CN6
DB25F
CN7
DB9M
U6
DS14C238
U19:A
U19:B
U19:C
U19:D
U19:E
U19:F
SN7406D
JP6
JP7
Jumper plug
R676
R677
R675
R678
R687
R697
C574
C577
C20
C4
C15
C21